

2015-1917

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**In the  
United States Court of Appeals  
for the Federal Circuit**

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NETFLIX, INC.,  
*Plaintiff/Counterclaim Defendant-Appellee,*  
v.

ROVI CORPORATION, ROVI TECHNOLOGIES CORPORATION, ROVI GUIDES, INC., FKA  
GEMSTAR-TV GUIDE INTERNATIONAL, INC., UNITED VIDEO PROPERTIES, INC.,  
*Defendants/Counterclaimants-Appellants,*

APTIV DIGITAL, INC., STARSIGHT TELECAST, INC.,  
*Counterclaimants-Appellants.*

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Appeal from the United States District Court for the Northern District of California  
in No. 4:11-cv-6591-PJH, Judge Phyllis J. Hamilton

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**BRIEF OF APPELLANTS ROVI CORPORATION, ROVI  
TECHNOLOGIES CORPORATION, ROVI GUIDES, INC., UNITED  
VIDEO PROPERTIES, INC., APTIV DIGITAL, INC., and STARSIGHT  
TELECAST, INC.**

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December 14, 2015

## CERTIFICATE OF INTEREST

Counsel for Defendants/Counterclaimants-Appellants Rovi Corporation, Rovi Technologies Corporation, Rovi Guides, Inc., United Video Properties, Inc. and Counterclaimants-Appellants Aptiv Digital, Inc. and StarSight Telecast, Inc. (collectively, Rovi) certifies the following:

1. The full name of every party or amicus represented by me is:

Aptiv Digital, Inc., Rovi Corporation, Rovi Guides, Inc., Rovi Technologies Corporation, StarSight Telecast, Inc., United Video Properties, Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

None.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

Rovi Corporation is the parent corporation of Rovi Technologies Corporation and Rovi Guides, Inc. Rovi Corporation is also the parent corporation of Aptiv Digital, Inc. (now known as Aptiv Digital LLC). United Video Properties, Inc. and StarSight Telecast, Inc. have merged into Rovi Guides, Inc.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

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## **STATEMENT OF RELATED CASES**

Pursuant to FED. CIR. R. 47.5, Defendants/Counterclaimants-Appellants Rovi Corporation, Rovi Technologies Corporation, Rovi Guides, Inc., United Video Properties, Inc. and Counterclaimants-Appellants Aptiv Digital, Inc. and StarSight Telecast, Inc. (collectively, Rovi) note that:

(a) there have been no other appeals in this case; and

(b) aside from the present case, there are no other cases pending in this or any other court that will directly affect or be directly affected by this Court's decision in the pending appeal.



## **STATEMENT OF JURISDICTION**

The district court had jurisdiction under 28 U.S.C. §§ 1331, 1338(a), and 1367. Final judgment was entered on July 15, 2015, and the notice of appeal was timely filed on August 10, 2015. Appx1; Appx7190. This Court has jurisdiction under 28 U.S.C. § 1295(a).

## **STATEMENT OF ISSUES**

The two patents at issue in this appeal—with priority dating to 2000 and 1998—address specific technological problems unique to today’s digital era. One addresses the proliferation of media-capable devices that have incompatible formats for viewing content. The other addresses difficulties arising from the proliferation of content available for viewing.

1. The '906 Patent. Media-on-demand technology delivers content a viewer can see and hear. U.S. Patent No. 7,103,906 (the '906 patent) covers an improved “media-on-demand” system that, for the first time, allows users to begin watching content on one device, stop or pause, and resume watching at the same point on a different device that utilizes a different media format than the first device. Appx57; Appx69-70. The first issue on appeal is whether that improved media-on-demand system is patent-eligible subject matter under 35 U.S.C. § 101.

2. The '709 Patent. As available media content has proliferated, the need for more powerful and user-friendly electronic program guides has become

more critical. Rovi's U.S. Patent No. 7,065,709 (the '709 patent) provided a major improvement. Prior technology had advanced from the printed TV Guide, to a program guide that scrolled across the screen on a television channel, to an interactive television program guide from which a program could be selected for viewing. The '709 patent provided, for the first time, interactive television program guides that also made personalized viewing recommendations to the user based on that user's preferences and viewing history. Appx71; Appx124. The second issue on appeal is whether that improved interactive program guide is patent-eligible subject matter under § 101.

## **STATEMENT OF THE CASE**

### **I. Preliminary Statement**

Today, users routinely access and view video and other media content on myriad platforms—televisions, computers, iPads, smartphones, etc. In the past, access to such programming was often limited to a single device: Once the program was recorded using a particular device, it was available for viewing only on that device or device type. In 2000, however, four IBM engineers developed technology to change that. In particular, they developed a “user controlled multi-device media-on-demand system” that does not merely allow users to watch the same content on different devices. It also allows seamless transitions across devices, permitting users to begin watching content on one device in one media

format, and later resume watching the same program from the same point on a different device in a different media format. Appx4732. The '906 patent resolves a technological problem created by today's technologically interconnected, multi-platform environment—ensuring seamless media-content accessibility across locations and across device types and formats.

While the '906 patent addresses the special problems arising from a proliferation of potentially incompatible devices, the '709 patent resolves problems that arise from the explosion in media content now available for viewing. When programming was limited to a handful of broadcast or cable channels, customers were content to find the programming that interested them by using the printed TV Guide or watching a dedicated television channel where programming options slowly scrolled across the screen.

As the number of television channels grew, early interactive television guides emerged that allowed users to search through available options by program name or search among programming options by category. But in a world with hundreds of channels and thousands of movies available on demand, such guides are insufficient to help customers find desired programming among the daunting array of available options. The '709 patent addresses that problem by providing an “interactive program guide system for providing a customized viewing experience.” Appx124. It does not merely allow users to navigate available options, but

provides *personalized viewing recommendations* based on programs watched, viewing history, and preference profile. *Id.*

These two patents are technological. They provide specific methods for creating concrete, definite, and tangible outputs that users can see. They generate video that can be watched seamlessly across different devices, and provide the user with personalized viewing recommendations. Each patent provides a technological solution in a technological field—video delivery and electronic television program guides—to redress difficulties that have arisen as a result of recent technological changes. They each “improve[] an existing technological process,” and are thus precisely the type of claims the Supreme Court identified as patent-eligible in *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2358 (2014). They address technical arts, not entrepreneurial ones. They provide technology we regularly use today, and indeed now take for granted, while watching television or streaming movies. As the U.S. International Trade Commission explained when finding that the ’709 patent covers patent-eligible subject matter, its claims “are all directed to particular applications for interactive program guides that deal with video programming, such as movies and television programs.” Appx7254.

The district court nevertheless invalidated the patents under § 101 as mere “abstract ideas.” That ruling was error. It threatens to make these technological fields patent-ineligible in their entirety, defying the Supreme Court’s admonition to

“tread carefully in construing this exclusionary [‘abstract ideas’] principle lest it swallow all of patent law.” *Alice*, 134 S. Ct. at 2354.

## **II. The Patents At Issue**

Appellants in this case (collectively “Rovi”) were pioneers in entertainment technology long before today’s digital era. Until the 1990s, television was mostly broadcast over the air, and VCRs provided the primary means of watching programs at the viewer’s convenience. Back then, Rovi subsidiary Gemstar-TV Guide International kept viewers abreast of available content through its TV Guide publication, and it helped consumers record desired content through its “VCR Plus” technology. Using that technology, consumers could avoid the need to program their VCR to record certain channels at certain times. Instead, they could simply type specified published program codes, which corresponded to identified programs, onto their remote control; the VCR would take matters from there.

As technology advanced, so did Rovi. For example, Rovi began providing the software that drives on-screen and “interactive” television guides used in cable boxes manufactured by companies such as Motorola. A vast array of participants in the digital media world—including electronics manufacturers, cable companies, and social networks—use Rovi’s in-depth metadata information on movies, television shows, celebrities, music, games, and books to help consumers find digital entertainment. The patents at issue here reflect Rovi’s ongoing efforts to provide

technological solutions to the problems created by proliferating content and devices. Indeed, the patents at issue here have priority dates stretching back at least 15 years—to an era in which the first TiVo DVR was awaiting release; less than a third of American households even had Internet access or mobile phones; the first iPad was still more than a decade away; and Hulu and Netflix’s streaming services were nearly a decade off.

**A. The ’906 Patent: An Improved Media-On-Demand Server**

**1. Media On Demand Before the ’906 Patent**

Initially, viewers could watch programming only in real time as it was broadcast over the air or delivered through set-top boxes. Eventually, devices were developed—VCRs, and later DVRs—that allowed viewers to record programs for later viewing. But it was not until the mid-1990s that streaming digital services, such as “video on demand,” allowed users to watch programming on their TVs at their own convenience in the first instance. Appx3159.

By the late-1990s, digital “on demand” media was available for viewing on television primarily through set-top boxes offered by cable and satellite companies. Consumers could also obtain on-demand programming for personal and handheld computers and other wireless devices through the Internet—typically by downloading it. Appx3159. “Typical subscriber access devices include PCs, TVs, set-top boxes, handheld computers, wireless LAN devices, and audio devices that have

the capability to download digital media content from the Internet for later playback and viewing.” Appx64(2:11-15). The growth of “broadband access and services” was simultaneously “decreasing download time” and “increasing user willingness to access digital media networks.” Appx64(2:6-8). Today, most connections to the Internet have sufficient bandwidth to allow consumers to watch movies on demand as the video is streamed to their devices, without the need to download it first.

“[T]he development of [media-on-demand or] MOD services, broadband access and the existence of a myriad of access devices, each having its own capabilities and access characteristics,” however, created “a new problem of user/subscriber control over the transmission of digital media.” Appx64(2:16-20); Appx3159. Customers “increasingly wanted to watch programs in different places,” at different times, “and on different devices having differing capabilities.” Appx4195; Appx64(2:16-37).

Then-existing media-on-demand systems made that exceedingly difficult. Appx64(2:16-37). Users could start the delivery of their desired media “on demand” on one device but there was, for example, no easy way to pause viewing and then resume watching on a different device. Appx3159. Users could record the content on a VHS cassette in a VCR connected to the television; save and store the media on a PC-based appliance (such as TiVo) connected to a set-top box; or

use an application to capture media streaming from the Internet onto a disk connected to a personal computer. Appx3159. But that imposed significant limits. Appx64(2:16-33). Each required the user to capture and store the entire program or movie in a single technological format, and it could be paused or resumed only in that same format. Appx3159. That meant the user often was limited to just one device, or at best could move to a format-compatible device by physically transferring the media. *Id.* For example, a user could stop watching a video on a VCR, eject the VHS cassette, and physically transfer the cassette to a VCR in another room. *Id.* But there was no easy way for that user to resume watching the program on a format-incompatible device, such as a personal computer or handheld device.

The proliferation of new devices and means by which media content could be delivered (the Internet, cable, satellite, cellular networks, etc.) thus created a pressing need for media-on-demand technology that was not limited by format, device, or location. Appx64(2:16-34); Appx3159; Appx4195. It was that technological problem—the need for portable, accessible media on demand across multiple platforms—that the ’906 patent solved.

## **2. The Invention Claimed in the ’906 Patent**

In 2000, four IBM engineers—Neil Katz, Bruce Semple, Edith Stern, and Barry Willner—filed a patent application for a new “user-controlled, multi-device, media-on-demand system.” Appx57. The application disclosed “a method and

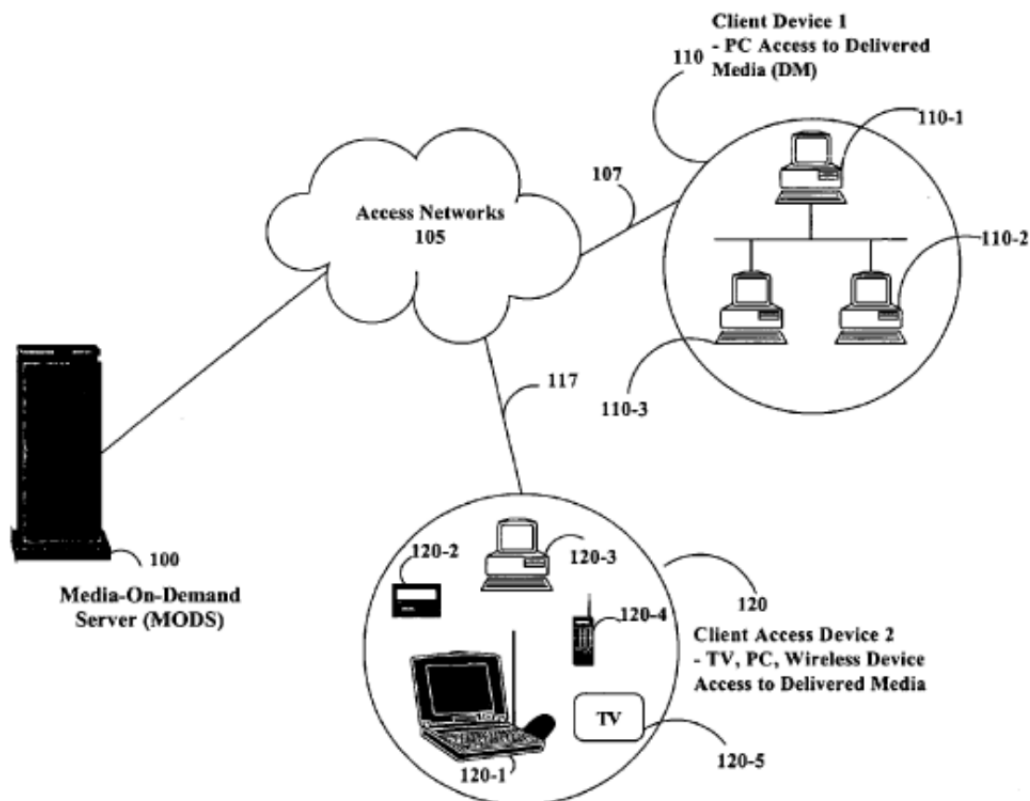


apparatus for dynamically controlling and referencing digital media *independent of the point of access*”—that is, without regard to the nature of the device used or its location. Appx64(1:16-21) (emphasis added). The invention “provide[s] users with the ability to receive delivered media across a network in a client device through a communications link to a media-on-demand server (MODS) regardless of the properties of the client device and the characteristics of the communications link.” Appx66(5:19-25).

Using the invention, users can switch devices (*e.g.*, from TV to smartphone) and even communications links (*e.g.*, from cable to Internet). As the inventors explained, users “can resume the delivery of a previously interrupted reception of delivered media through a particular client device and a corresponding communications link each of which may have properties which differ from the client device and corresponding communications link of the interrupted delivery.” Appx66(5:40-44). That is possible because, on resuming “delivery, the properties of the new client device can be determined and the format of the delivered media dynamically changed to accommodate the new client device.” Appx66(5:44-48). The invention likewise allows the viewer to resume viewing precisely where he or she previously left off. *Id.* In short, the invention allows consumers to “access media (say for example a movie) on one system (say a TV) as served by a video-on-demand server, stop viewing, and finish watching the same film potentially in

another physical location, on a different device (*i.e.*, a PC) from where the viewer left off.” Appx4196. That “significant technological improvement in media-on-demand systems” enables “the delivery of the same media in different formats to different devices having different capabilities over different communications links.” Appx4199.

The IBM inventors described the architecture for the invention, which includes a media-on-demand server (MODS) with a plurality of access interfaces connected by a plurality of communication links to a plurality of client devices:



Appx58(Fig.1); Appx66(6:8-14). They further developed and disclosed two means of solving the different-device-different-format problem—(1) “storing files in different formats for delivery upon request,” or (2) “transcoding formats on the fly.” Appx4196.

Under the first method, “the MODS 100 can store delivered media in a variety of formats, wherein each format is compatible with a particular type of client access device. For example, the MODS 100 may store particular delivered media in MPEG1, MPEG2, Digital Video Broadcast, QuickTime, etc.” Appx66(6:15-20). When a playback request is received, the media-on-demand server identifies the client device type and selects the appropriate format. “Alternatively,” using the second method, “the MODS 100 merely can store a single default format of the delivered media. However, when a request for delivered media is received from a client device having a particular device type, the MODS 100 can identify the device type and transcode or convert the delivered media from the default format to a format compatible with the identified client device type.” Appx66(6:23-30).

Because users might begin viewing on one device and continue on another, the IBM team explained that their invention would record a format-invariant bookmark specifying “a position in the delivered media which most recently had been transmitted to the [first] client device.” Appx67(8:1-13); Appx4196. This

“digital bookmark” would require information “categorized into three major categories—data used to uniquely identify the user . . . , data used to uniquely identify the delivered media . . . , and data unique to the last presentation of at least a portion of particular delivered media. . . .” Appx67(8:45-50); Appx61(Fig.4). Thus, when “the viewer chooses to resume delivery on a second device, the system identifies the capabilities of the second device the viewer was using, and resumes delivery of the video in the appropriate format and at the location within the video specified by the bookmark.” Appx4196; Appx67-68.

This new technological improvement to the nascent media-on-demand systems of the late-1990s is reflected in claims 1-3 of the '906 patent. Claim 1 recites a “method for providing configurable access to media in a media-on-demand system comprising” the following “steps”:

[1] delivering the media to a first client device through a first communications link, wherein the media is configured in a format compatible with identified device properties of said first client device and said first client device is associated with a first user;

[2] recording a bookmark specifying the position in the media;  
and

[3] delivering the media to a second client device through a second communications link, said delivery to said second client device beginning at said position specified by said recorded bookmark, wherein the media is configured in a format compatible with identified device properties of said second client device and said second device also is associated with said first user.

Appx69(12:47-61) (bracketed numbers added for reference).

Claim 2 includes another limitation to address the use of different device types: “identifying device properties for each of said first and second client devices, device properties of said first client device being identified prior to commencing delivery of the media to said first client device and device properties of said second client device being identified prior to commencing delivery of the media to said second client device.” Appx69-70(12:62-13:3). Claim 3 further requires the media be “stored in a media-on-demand server (MODS) and delivered to said first and second client devices via said first and second communications link respectively.” Appx70(13:4-7). Finally, claims 4 and 6 address two different embodiments for adjusting delivery based on device type. In claim 4, media is stored in a single format and transcoded on the fly to meet the requirements of specific devices. Appx70(13:8-17). In claim 6, by contrast, media is stored in multiple formats, each compatible with different device types, and a different stored recording is used depending on the device. Appx70(13:28-39); *see also* Appx4196.

The '906 patent thus enables a technological convenience we take for granted today—the ability to “begin viewing certain content on a home device, such as an interactive TV, and later resume viewing the same content on a cell phone display while waiting to catch a flight at the airport.” Appx4732. Even

though the devices use different formats, we can “resume viewing from the same point in a presentation of the content where [we] had left off.” *Id.* The ’906 patent made that possible in an era in which the first iPad was still a decade away.

## **B. The ’709 Patent: An Improved Interactive Program Guide**

### **1. Program Guides Before the ’709 Patent**

Television program guides were first published in print media, such as the local paper and the TV Guide Magazine published by Rovi subsidiary Gemstar. The first *on-screen* program guide was in essence a television channel viewers could watch: A list of available channels, and corresponding program names and times, would scroll across the screen. That “scrolling guide” was not interactive. Viewers could not pause, speed up, or slow down the scrolling to find content that interested them. Instead, they had to wait for the desired channel or program to scroll by. After finding the desired information—*e.g.*, what was on HBO, or which channel was carrying a Presidential debate—viewers separately used a remote control to tune to their channel of choice.

The next generation of program guides was different. The program listings were displayed on the television screen in a grid format, and viewers could navigate through the available programs, highlight the desired program, and tune to the highlighted channel by selecting it. The guide software, housed in the set-top box attached to the viewer’s television, enabled such “highlight and select” tuning.

In the early 1990s, Rovi was a leading innovator in developing “interactive” guides that would “allow users to navigate through television program listings using a remote control.” Appx112(1:28-29). Those electronic guides received a signal sent from the service provider’s “headend” (essentially a central office where cable companies receive content from satellite or other sources, and then distribute it across their cable systems). The viewer’s set-top box, remote control, television, and recording device would then work together to display (or record) the viewer’s selections.

Rovi’s interactive guides, however, included bi-directional communication, with messages going *from* the user’s cable box to the “headend.” That made it possible, in theory, for users to interact with the program guide in additional ways. For example, a viewer could use the guide to order access to a special event (like a boxing match) or a video-on-demand feature (like a movie). That request (unlike with the prior technology) would be sent to the headend. Upon receiving it, the headend would then transmit the requested programming to the viewer’s home. Appx7611-20.

As of 1998, “[c]lient-server based program guides ha[d] been proposed in which program listings are stored on a server at a cable system headend. The server provides the program listings to program guide clients implemented on the set-top boxes of a number of users associated with each headend. As users

navigate within a program listings grid, the server provides program listings to the client for display.” Appx112(1:36-42). While such client-server based interactive program guides represented a substantial technological advance, they remained “limited in their functionality due to their limited use of the resources of the server.” Appx112(1:42-44).

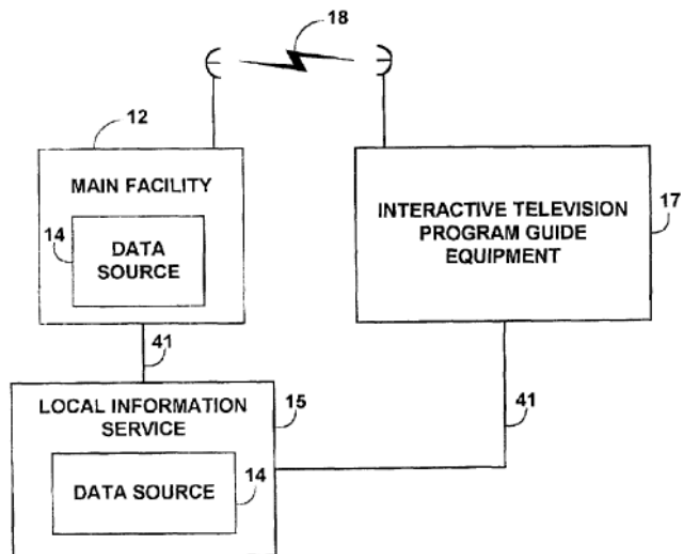
## **2. The Invention Claimed in the ’709 Patent**

In August 1998, a team of United Video<sup>1</sup> engineers—Michael Ellis, Thomas Lemmons, and William Thomas—filed a patent application for an invention that materially advanced client-server interactive program guides. Appx71. The application disclosed an interactive program guide “system in which a main facility (e.g., [the headend]) provides data from one or more data sources to a number of television distribution facilities such as cable system headends, broadcast distribution facilities, satellite television distribution facilities, or other suitable distribution facilities.” Appx112(1:56-62). These facilities and related equipment are depicted in Figures 1 and 2a:

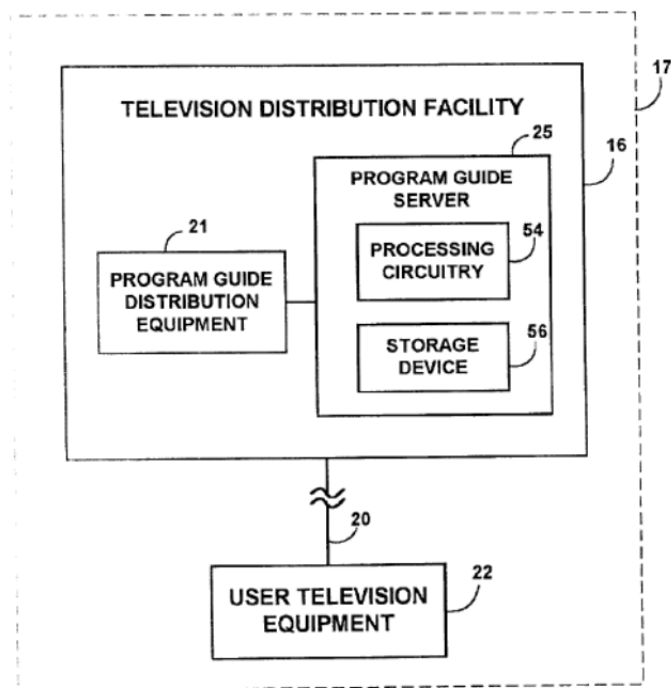
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<sup>1</sup> United Video became TV Guide International, Inc., was merged into Gemstar-TV Guide International, Inc., and is now known as Rovi Guides, Inc.

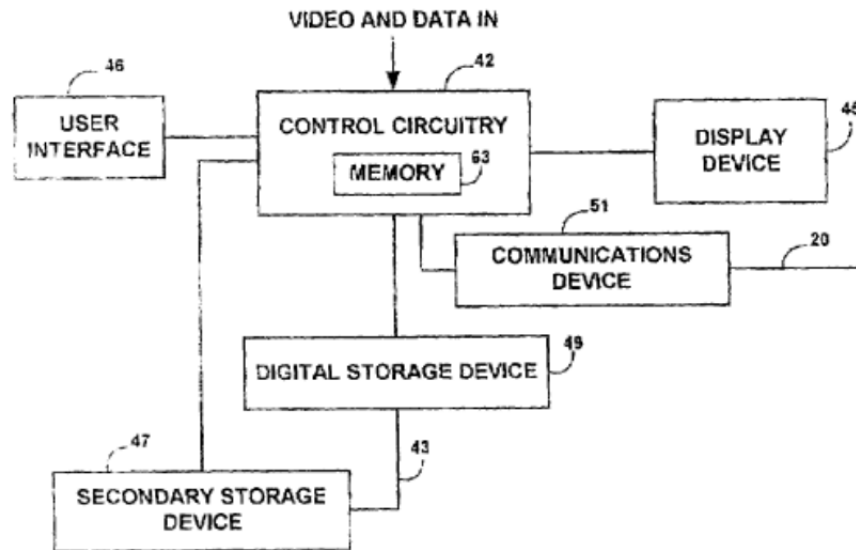




Appx73 (Fig.1); Appx113 (4:18-19).



Appx74 (Fig.2a); Appx114 (5:13-21). And a generalized embodiment of the user television equipment 22 shown in Figure 2a is further depicted in Figure 4:

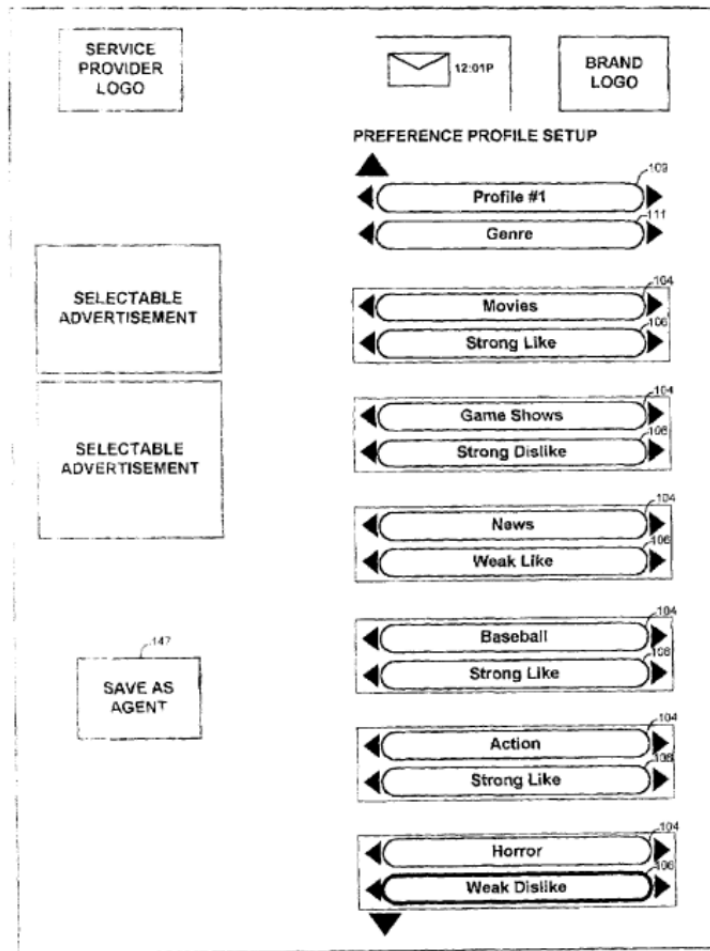


Appx78(Fig.4); Appx116(9:26-27). A user “controls the operation of user television equipment 22 with user interface 46”—typically, a “wireless remote control.” Appx116(9:64-66). To “access the functions of the program guide, a user instructs the program guide implemented on interactive television program guide equipment 17 to generate a main menu or other desired program guide display screen for display on display device 45.” Appx116(10:3-7).

Using that architecture, the '709 patent offered a new way for people to find content among the increasingly broad array of available programming using a program guide. Appx112(2:25-28). In addition to allowing users to work their way through menus to find available offerings, the program guide would offer *individual viewing recommendations, tailored to each user*, based on the user's viewing preferences and viewing history. Appx112(2:28-67). That represented a major advance in the evolution of program guide technology: In the span of 20

years, electronic guides had moved from non-interactive listings that scrolled across a dedicated television channel, to interactive listings that allowed users to find and potentially order programs by category, to an interactive program guide that anticipates preferences for a given user and proactively *proposes* programs that might be of interest to that user. Appx4222-23.

To achieve that, Rovi inventors used four structures: (1) a “user preference profile”; (2) a “viewing history database”; (3) a “program listing database”; and (4) a “personal viewing recommendation.” Appx124; Appx4224. The first, the “user preference profile,” is generated by “setup screens in which the user has selected attribute types by, for example, . . . arrowing right or left until a desired preference attribute type is displayed.” Appx119(15:5-9). The user thus has “an opportunity to set preference levels for series, genres, channels, actors and actresses, ratings, and other types of preference attributes.” Appx119(15:10-12). Figures 13a-f offer examples of preference profile setup screens managed by program guide server 25:



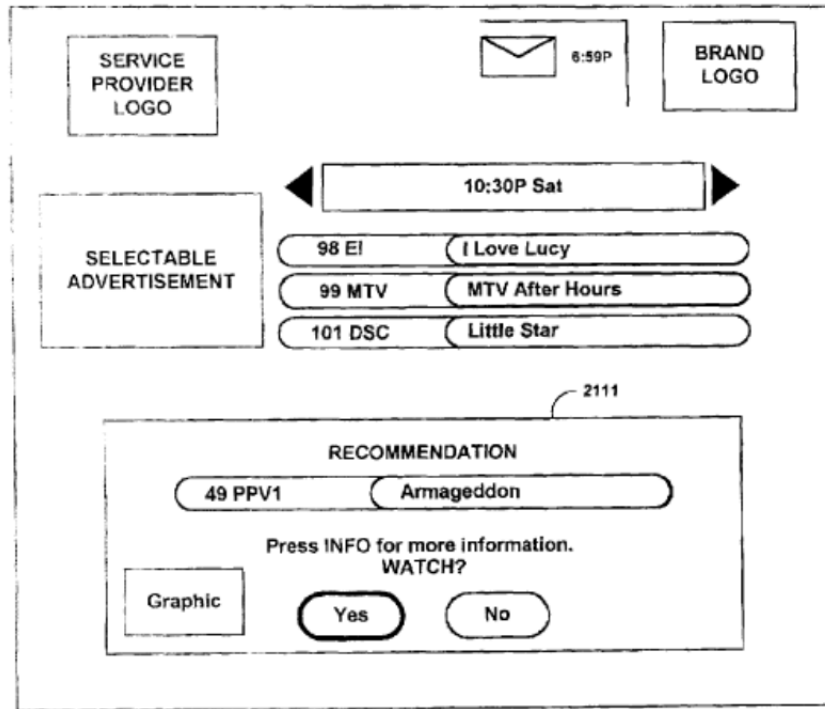
*See, e.g.,* Appx91 (Fig.13b); Appx90-95; Appx117-18; Appx119 (15:5-60).

The program guide server also “record[s] the viewing histories of users” on a storage device. Appx121(19:18-20). The resulting viewing history database may “keep track of all the programs that a user watches for longer than a pre-defined time, and record the household that the guide client is running in, the current active preference profile or profiles, the program (or its identifier), and how long the user watched the program.” Appx121(19:22-26); Appx124.

The program guide server can then “construct relational database expressions from the viewing histories that define expressions for the program categories and ratings for programs that users have watched, scheduled reminders for, searched for, or ordered the most.” The program guide server in turn applies the user preference profile criteria to the programs. By “comparing these results against the list of [available but-not-yet-watched] programs in the program listing database,” the invention can “generate personal viewing recommendations.” Appx121(20:24-38); Appx4222-28.

The specification provides illustrations of how the disclosed “program guide may process user profiles along with the viewer histories to present a more customized viewing experience to the user.” Appx121(19:54-56). For example, the program server guide may “identify which programs or series episodes users have watched,” and then “indicate to a user that the user has not seen a particular episode of Saturday Night Live.” Appx121(19:56-67). Or the program server guide may “determine that” a particular movie—in the example, Armageddon—“meets the criteria of the [relational database] expression that was run, and also meets the criteria of the current user profile.” Appx121(20:39-44). Considering factors such as the user’s preference for movies, types (action, comedy), permissible ratings (PG-13) and the fact it has not yet been watched, the program server would “indicate the movie Armageddon . . . and its air time to the program guide

client and indicate to the client . . . that a viewer recommendation for the movie is to be displayed.” Appx121(20:47-50). The resulting personal viewing recommendation is depicted in Figure 20b:



Appx106(Fig.20b); Appx4227. The invention thus converts program guides from tools users navigate to find desired programming into a device that itself identifies potentially attractive programs and proposes them to users on its own.

That reinvention of interactive program guides—from a merely responsive tool to a device that also anticipates preferences—is recited in claims 13 and 14 of the '709 patent. Claim 13 thus recites:

A method for use in an interactive program guide system for providing a customized viewing experience to a user, comprising:

[1] generating a viewing history database comprising program listings and associated program criteria;

[2] determining at least one of the associated program criteria from the viewing history database that meets a user preference profile;

[3] determining from a program listing database a set of programs not yet watched;

[4] applying the at least one of the associated program criteria to the set of programs not yet watched to generate at least one personal viewing recommendation; and

[5] providing the personal viewing recommendation to a user.

Appx124(26:16-29) (bracketed numbers added for reference).

Claim 14 recites the “method defined in claim 13,” but provides additional requirements for the “generating a viewing history database” limitation [1] above. Appx124(26:30-38). That generating limitation, claim 14 specifies, “comprises storing the program listings and the associated program criteria for at least one of: [a] programs that the user has watched; [b] programs for which the user has scheduled reminders; [c] programs for which the user has scheduled for recording; [d] programs for which the user has searched; and [e] programs for which the user has ordered.” *Id.* (bracketed letters added for reference).

The '709 patent thus claimed “a new, unconventional, and useful improvement in interactive program guide technology at the time of the claimed invention in 1998.” Appx4230. The interactive program guide does not merely respond to

queries. Instead, based on the user’s preferences, her ongoing interactions with the guide, and the programs she has not yet watched, it generates personal viewing recommendations. Appx124; Appx112(2:28-67); Appx4222-30. Those features—unknown in 1998—are part of everyday life today.

### **III. Proceedings Below**

#### **A. Initiation of the District Court Case**

In 2011, Netflix filed this action in the Northern District of California, seeking a declaratory judgment that it does not infringe various Rovi patents, including the ’906 patent. Appx1001. Netflix “introduced its streaming service” to allow customers to “watch content of their choice on their computing devices” in 2007—one year *after* the ’906 and ’709 patents issued, and nearly a decade after their priority dates. Appx1003; Appx57; Appx71. Rovi counterclaimed for infringement of the ’906 and ’709 patents (among others). Appx1241; Appx1246.<sup>2</sup>

#### **B. Proceedings Before the ITC**

Rovi also filed a complaint with the U.S. International Trade Commission, alleging that Netflix infringes Rovi’s patents, including the ’906 and ’709 patents.

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<sup>2</sup> Rovi asserted three additional patents, U.S. Patent No. 7,974,962; U.S. Patent No. 7,945,929; and U.S. Patent No. 6,898,762 (the ’762 patent), which the district court invalidated under 35 U.S.C. § 101. Appx36. The ’762 patent shares a specification with the ’709 patent, but is currently in reexamination. In the interest of judicial economy, Rovi has limited this appeal to the ’906 and ’709 patents. Appx1; Appx36.



*Certain Products Containing Interactive Program Guide and Parental Control Technology*, Appx1778. On unopposed motion, the district court stayed litigation between Netflix and Rovi pending the ITC action. Appx1862.

Before the ITC, Netflix challenged the validity of both the '906 and '709 patents. Appx7444-62; Appx7254-64. Netflix, however, did not argue that the '906 media-on-demand patent was ineligible under § 101, raising challenges only under §§ 102 and 103. The ITC rejected those challenges to the '906 patent, finding that it was neither anticipated nor obvious in light of the prior art. Appx7444-62.

Netflix raised challenges to the '709 patent under §§ 101 and 103. Those too were rejected. Appx7254-64. The ITC found no merit to Netflix's argument that the '709 patent's interactive programming guide claims amounted to patent-ineligible, abstract ideas:

None of the asserted claims covers unpatentable abstract ideas. The claims are all directed to particular applications for interactive program guides that deal with video programming, such as movies and television programs. Moreover, the particular devices claimed are integral to the inventions, and not merely used to accelerate an ineligible mental process.

Appx7254 (internal citation omitted). The ITC continued:

The '709 patent claims are specifically directed to client-server systems wherein an interactive program guide client device works in tandem with a remote interactive program guide server. . . . In the client-server interactive program guide system, recited elements play

an integral role in the claimed invention in a way that a person making calculations or computations could not.

Appx7254-55 (internal citation omitted); *see also* Appx7255-56 (concluding that the claims of the '709 patent cannot be performed in the human mind but are instead “tied to particular devices”); Appx4224-27.

### **C. Resumed District Court Proceedings**

After the ITC ruled, the district court lifted its stay, Appx1878-81, and Netflix filed a motion for summary judgment of invalidity under § 101, Appx2925. In response, Rovi submitted (among other things) the declaration of Dr. Michael Shamos—the Distinguished Career Professor in the School of Computer Science at Carnegie Mellon University. Appx4193.

1. The '906 Patent. Dr. Shamos explained that the '906 patent represented “a significant technological improvement in media-on-demand systems” that enabled “the delivery of the same media in different formats to different devices having different capabilities over different communications links.” Appx4199. Addressing the key limitations, Dr. Shamos observed that, in 2000, a person of reasonable skill in the art would recognize that the claimed first and second client devices, first and second communications links, and media-on-demand server (MODS) were *not* “generic or conventional arrangement[s]” of “[g]eneric computers.” Appx4200-01. Instead, one of skill in the art would understand that the claims recited “specially designed machines” working together in “a particular

arrangement that enables the media-on-demand server to perform the specialized function of delivering media to different types of devices depending on the media format the device is capable of receiving.” Appx4201. Indeed, the media-on-demand server itself was recognizable as “a particular machine specifically designed to deliver video in different formats to different devices with different identified capabilities—based on transcoding formats on the fly or storing files in different formats for delivery upon request.” Appx4201; Appx64-65 (2:66-3:35).

Dr. Shamos rejected the assertion that claim 1 could be dismissed as a mental rather than technical process. Its steps “cannot possibly be performed in the human mind or using pen and paper.” Appx4202. For example, the step “of ‘recording a bookmark specifying a position in the media’ requires a fundamental change to the data,” Appx4203, using specifically identified criteria. Similarly, “the ‘first client device,’ ‘second client device,’ and MODS working in tandem together in a specialized way, as required by claim 1, is a significant technological improvement to media-on-demand systems.” Appx4204. “These specialized steps do not merely limit the claimed method to the particular technological environment of media-on-demand systems,” he concluded. Rather, they work “an actual improvement in media-on-demand systems themselves” by giving them functionality they previously lacked. *Id.*

2. The '709 Patent. Dr. Shamos explained that the '709 patent “addresses a new problem that specifically arose in interactive program guides,” Appx4222, in view of the proliferation of available content. It “requires a specific and unique program guide-program server arrangement working in tandem with the user’s local program guide client application . . . [for the] purpose of determining associated program criteria that meet a user preference profile and identifying programs that have not yet been viewed to generate personal viewing recommendations.” Appx4223.

The '709 patent required various structures “integral to performance of the claimed method, including a ‘viewing history database,’ ‘program listing database,’ ‘user preference profile,’ and ‘personal viewing recommendation.’” Appx4224. Each, he explained, was a “material object”: The user preference profile “is a tangible, interactive profile implemented on a computerized device.” *Id.*; Appx90-92 (Figs.13a-13c). The “viewing history database” and “program listing database” were particular, rather than generic, machines. Appx4228. And, perhaps most important, the generated personal viewing recommendation is a physical output. It is “a material object” the user can see “displayed on the user’s physical equipment”—no less than the movie or event that the viewer might eventually watch. Appx4226; Appx105-06 (Figs.20a-20b). The production of that output, he concluded, was itself a physical process requiring “a fundamental change to the

data that cannot be performed in the human mind.” Appx4229. Together, the claimed steps “combined to create a new, unconventional, and useful improvement in interactive program guide technology at the time of the claimed invention in 1998.” Appx4230. The resulting combination of specialized machines and objects worked “together in a specialized way”—not to limit the claims “to the particular environment of interactive program guides,” but to effect “an actual improvement in interactive program guide systems themselves.” Appx4231.

#### **D. The District Court’s Summary Judgment Rulings**

The district court nevertheless granted Netflix summary judgment, holding that the asserted claims of the ’906 media-on-demand server patent, and the ’709 interactive program guide patent, are patent-ineligible abstract ideas under § 101. Appx2-36.

1. The ’906 Patent. The district court characterized the ’906 patent as “a method of creating a ‘bookmark’ to allow users to start watching a program on one device, then resume the program at the same point on a different type of device.” Appx29. Focusing solely on the bookmarking function, the court declared “that the ’906 patent claims are directed to the abstract idea of bookmarking media files across devices . . . .” Appx31.

The court then turned to the “inventive concept.” Appx31. Although the court noted that this inquiry raised factual questions, Appx33, it repeatedly ignored

or rejected Dr. Shamos's related factual testimony on summary judgment. Appx31-35. In particular, the court ruled that the claimed "media-on-demand system," "media-on-demand server," and "client device[s]" were indistinguishable from a "general purpose computer." Appx31-32. The court further found—again, despite Dr. Shamos's contrary testimony—that the "addition of a bookmark" did not involve a "fundamental alteration" of the data. Appx34.

Finally, the court stated that, "[w]hile the very idea of allowing multiple-device playback may have been novel at the time of the invention," Dr. Shamos did not explain "*how* the claimed method differs from a *conventional method* for recording bookmarks for multiple-device playback." Appx35 (emphasis added). The court did not identify what that putative "conventional method" would have been, and the prior art disclosed no such prior method. The court thus ruled that Rovi had failed to distinguish the novel claims of the '906 patent from a "conventional method" of accomplishing something that had never before been done. "[T]he '906 patent," the district court ruled, "fails to disclose an inventive concept," and "thus, is invalid under § 101." Appx35-36.

2. The '709 Patent. Contrary to the ITC's conclusion, the district court held the relevant claims of the '709 patent likewise ineligible under § 101. Appx27-29. The court again narrowed the '709 patent to a single feature, characterizing it as "a system and method for providing personal recommendations based

on a user’s viewing history.” Appx27. It then posited that—regardless of the novelty of the ’709 patent claims—“they nonetheless are directed to an abstract idea, namely, the abstract idea of generating viewing recommendations.” Appx27-28.

The district court held that the ’709 patent contained no “inventive concept.” Appx28-29. The court rejected both the relevant factual testimony of Dr. Shamos and the ITC’s findings. Appx28-29. The ITC had concluded that the ’709 patent represented an improvement to a specific technical art—“interactive program guides that deal with video programming.” Appx7255-56. The district court characterized the claims as involving nothing more than the use of “generic computer[s].” Appx28.

The court did not dispute that, before the ’709 patent was put into practice, program guides had never before generated viewing recommendations. But it ruled that the claims of the ’709 patent “do not go beyond routine, conventional means of generating viewing recommendations.” Appx29. Having found “no inventive concept” beyond supposedly “conventional means” of achieving never-before-achieved goals, the court held that “the ’709 patent is invalid under § 101.” *Id.*; Appx35.

## SUMMARY OF ARGUMENT

The ’906 patent and ’709 patent claims at issue here satisfy the two-step test for patentable subject matter eligibility under *Alice Corp. Pty. Ltd. v. CLS Bank*

*Int'l*, 134 S. Ct. 2347 (2014). There is nothing abstract about the media-on-demand server, or the interactive program guide, these patents claim.

**I. The '906 Patent.**

**A.** Addressing step one, the claims of the '906 patent are “directed to” a concrete technological solution—a “user controlled multi-device media-on-demand system,” Appx57, that makes it possible to view the same content in different locations and on different devices even if they use incompatible media formats. The claims specifically recite a “method for providing configurable access to media in a media-on-demand system.” Appx69-70. The claims thus are directed to a specific technological process. They are not directed to a mathematical formula for calculating a number, or a “business method” for organizing human economic activity. The § 101 analysis thus should end at step one.

**B.** In any event, *Alice*’s second step confirms that the '906 patent’s claims represent a patent-eligible “application” of any ideas they implement. The claims do not merely identify a goal and then state, “do it on a computer.” Instead, they recite a novel application of media-on-demand technology using specific physical devices in a specific way. The particular method recited in the '906 patent does not preempt any “building blocks of human ingenuity,” *Alice*, 134 S. Ct. at 2354-55, or even all use of pausing and resuming media-on-demand content.



C. The Supreme Court observed in *Alice* that claims are patent-eligible when they “improve[] an existing technological process,” 134 S. Ct. at 2358, or “effect an improvement in [a] technology or technical field,” *id.* at 2359. The ’906 patent explains that the “continuing evolution from narrowband to broadband networks has fueled a growing need for digital data delivery” that can handle the Internet’s “myriad of text, audio, and video content.” Appx64(1:26-31). The claims address that technological need by providing a novel “method for providing configurable access to media in a media-on-demand system.” Appx69(12:45-46). The system not only overcomes the unique technical problems associated with proliferation of devices, but also provides seamless transitions across devices and locations so that users can resume watching on one device at the same point in the media content at which they paused viewing on another device. That is precisely the type of technological invention that is patent-eligible under *Alice*.

## II. The ’709 Patent.

A. The claims of the ’709 patent are not “directed to” an abstract idea at *Alice*’s step one. Instead, they are directed to an inherently technological “client-server interactive television program guide.” Appx71. Specifically, the claims recite a “method for use in an interactive program guide system for providing a customized viewing experience to a user.” Appx124. That program guide utilizes tangible equipment to generate tangible results—not only can users sort through

the vast array of available content; the invention allows the program guide itself to generate specific, customized viewing suggestions the user can see and read. Appx124.

**B.** The claims independently meet the standard of *Alice* step two. Taken individually and as an ordered combination, the limitations of the '709 patent represent a patent-eligible application of a technology, not an effort to patent a mere abstraction. The claims recite a specific arrangement of tangible objects and machines in an interactive guide system, and provide a specific mechanism for that system to generate a “personal viewing recommendation” for the user. Appx124(26:16-29). The ITC had previously found the claims patent-eligible because they covered a “particular application for interactive program guides that deal with video programming.” Appx7254.

**C.** Finally, the claims of the '709 patent “effect an improvement in [a] technology or technical field.” *Alice*, 134 S. Ct. at 2359. Television program guides have evolved from the printed TV Guide, to a channel that displays a scrolling list of programs, to on-screen guides that users can navigate using a remote control. The Rovi team created a new “interactive television program guide system” that is able to go a step further. It does not merely exploit the guide’s capabilities through two-way communications with the headend. It actively proposes available programming selections that correspond to the user’s viewing

habits and preferences. Appx4222. That helpful feature is a technological advance that we now take for granted. It too is the sort of enhancement the patent system is designed to promote and protect.

### STANDARD OF REVIEW

Determinations of patent-ineligibility under 35 U.S.C. § 101 are reviewed *de novo*. *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1255 (Fed. Cir. 2014). Applying Ninth Circuit law, decisions granting summary judgment are likewise reviewed *de novo*. *Spectrum Pharm., Inc. v. Sandoz Inc.*, 802 F.3d 1326, 1333 (Fed. Cir. 2015). As the moving party, Netflix bears the burden of proving invalidity by clear and convincing evidence. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1359 (Fed. Cir. 2007); *Nat'l Presto Indus. v. West Bend Co.*, 76 F.3d 1185, 1189 (Fed. Cir. 1996).

### ARGUMENT

The patents at issue here claim technological improvements that enhance two inherently technological processes—(1) delivering media content across multiple devices that use different formats, and (2) interactive electronic program guides that help consumers navigate and locate the programs, movies, and events they want to watch. The last two decades have seen an explosion in the types of devices used for viewing media content (PCs, tablets, smartphones), and a proliferation of distribution channels for delivering that content (cable, Internet, cellular

networks). But such devices do not always use compatible media file formats (QuickTime, MPEG, Windows Media, Flash Video). Yet consumers need—indeed, now expect—to be able to view media on demand on different devices, at different times, and in different locations. In 2000—when DVRs were just replacing VCRs and the iPad was still a decade away—four IBM engineers solved that multi-faceted technological problem through the invention claimed in the '906 patent. They developed a media-on-demand server technique that permitted viewers to begin watching content on one device in one location, pause, and then resume watching anew, exactly where they left off, in a completely different location, even when using a different device type that utilized different media file formats.

While the '906 patent made it more convenient to *watch* programming across device types and locations, the '709 patent advanced the art of interactive program guides that allow consumers to *find* desirable content to watch. Previously, interactive guides were navigational tools consumers used to search through an increasingly enormous volume of available content. The '709 patent claims a technique to allow guides to find content *themselves*—based on user profile and viewing history—and offer customized viewing recommendations. We take that technological feature for granted today. Indeed, it is a cornerstone of

defendant Netflix's success. But hindsight should not diminish the advances Rovi achieved back in 1998 that made that feature possible.

The district court invalidated both patents as claiming abstract ideas. But that is incorrect. As the Supreme Court observed, claims directed to “improv[ing] an existing technological process” are patent-eligible under § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2358 (2014). The patents here do just that. They do not represent methods of conducting business, or disembodied mathematical formulae. They improve existing, technical processes. They claim novel techniques. And they produce concrete outputs—programming that consumers can continuously enjoy while moving among devices, and customized viewing recommendations that eliminate the need to manually sift through thousands of viewing options to find programs of interest. The district court ruled that the patents covered mere “abstract ideas” only by misapplying the governing two-step framework; isolating a single feature of the invention or reducing it to a caricature; and resolving disputed facts in favor of the moving party. The judgment should be reversed.

## **I. The '906 Patent Claims Patent-Eligible Subject Matter**

It is now familiar ground that, although the Patent Act broadly defines patentable subject matter, it implicitly precludes efforts to patent “[l]aws of nature,

natural phenomena, and abstract ideas.” *Alice*, 134 S. Ct. at 2354. In determining whether a patent runs afoul of those exclusions, courts make two inquiries.

*First*, they ask “whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice*, 134 S. Ct. at 2355. While the courts have yet to offer “a definition of an ‘abstract idea’ that is not itself abstract,” *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1331 (Fed. Cir. 2015), the Supreme Court has clarified that claims are not abstract simply because they are computer-implemented, *Alice*, 134 S. Ct. at 2359 (“There is no dispute that . . . many computer-implemented claims are formally addressed to patent-eligible subject matter.”).

*Second*, even if the claims are “directed to” an abstract idea in the first instance, that is not itself fatal under § 101. Rather, the court must then “consider the elements of each claim both individually and as an ordered combination to determine whether the additional elements transform the nature of the claim into a patent-eligible application” of the abstract idea, as opposed to a claim on the abstract idea itself. *Alice*, 134 S. Ct. at 2355 (internal quotes omitted). Thus, a mathematical algorithm such as “Arrhenius’ equation” is an abstract idea that “is not patentable in isolation.” *Diamond v. Diehr*, 450 U.S. 175, 188 (1981). But a claim using “that equation in a process designed to solve a technological program in conventional industry practice” is patent-eligible. *Alice*, 134 S. Ct. at 2358

(internal quotes omitted); *see DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014) (finding patent-eligible a “claimed solution . . . necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks”).

The second step protects against patent claims that could broadly preempt the future use of a law of nature, natural phenomenon, or abstract idea. *Alice*, 134 S. Ct. at 2354. Claims on laws of nature, natural phenomena, or abstract ideas in isolation “risk disproportionately tying up the use of” these “building blocks of human ingenuity,” and thus run afoul of § 101. *Id.* But claims that “integrate the[se] building blocks into something more”—an *application* of these building blocks—“pose no comparable risk of pre-emption, and therefore remain eligible for the monopoly granted under our patent laws.” *Id.* at 2354-55.

Viewed through that two-step framework, the ’906 patent claims patent-eligible subject matter. It is neither directed to an abstract idea, nor seeks to establish an exclusive right to a mere idea.

**A. The ’906 Patent Is Directed to Concrete, Tangible, Media-On-Demand Technology**

The ’906 patent claims are directed to a concrete technological solution—a “user controlled multi-device media-on-demand system,” Appx57, that makes it possible to view the same content in different locations, even on different devices that use incompatible media formats. The claims at issue here recite a “method for

providing configurable access to media in a media-on-demand system.” Appx69-70.

1. There is nothing abstract about that. In setting out the general “contours of the ‘abstract ideas’ category,” *Alice*, 134 S. Ct. at 2357, the Supreme Court has explained that “abstract ideas” include mathematical algorithms, methods of organizing human activity, and fundamental economic practices. *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972) (“mathematical formula”); *Parker v. Flook*, 437 U.S. 584, 591-92 (1978) (“mathematical algorithm”); *Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“fundamental economic practice”); *Alice*, 134 S. Ct. at 2356 (“method of organizing human activity”); *id.* at 2359 (“principle[s] of the physical or social sciences”). This Court likewise has found that claims are directed to an ineligible “abstract idea” if they recite a “disembodied concept,” with “no particular concrete or tangible form or application.” *Versata*, 793 F.3d at 1331, 1333; *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (explaining that a “disembodied” concept “may be characterized as an ‘abstract idea’”).<sup>3</sup>

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<sup>3</sup> This Court’s cases align with Supreme Court precedent, principally identifying disembodied algorithmic and economic or entrepreneurial concepts as “abstract ideas” under § 101. *See OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359 (Fed. Cir. 2015) (method of pricing); *Content Extraction & Transmission LLC v. Wells Fargo Bank, N.A.*, 776 F.3d 1343 (Fed. Cir. 2014) (processing information); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709 (Fed. Cir. 2014) (showing an advertisement before delivering free content); *buySAFE, Inc. v. Google, Inc.* 765 F.3d 1350 (Fed. Cir. 2014) (creating a contractual relationship); *Bancorp Servs. L.L.C. v. Sun Life Assurance Co. of Canada*, 687 F.3d 1266 (Fed. Cir. 2012)



The media-on-demand innovations in the '906 patent at issue here are different. They do not address themselves to a mathematical formula or calculation. Contrast *Benson*, 409 U.S. at 73 (“method of converting signals from binary coded decimal form into binary”). They are not directed to a mathematical algorithm that simply generates a number. Contrast *Flook*, 437 U.S. at 596 (“method for updating the value of at least one alarm limit”). They are not directed to a fundamental economic practice, like the practice of hedging at issue in *Bilski*, 561 U.S. at 615. Nor do they simply direct the public to perform a similarly fundamental economic practice, like intermediated settlement, adding only that it be accomplished using a computer. *Alice*, 134 S. Ct. at 2352. The '906 patent claims are not directed to an entrepreneurial idea of any kind, as were the claims in *Versata*, 793 F.3d at 1331; *OIP*, 788 F.3d at 1360; *Ultramercial*, 772 F.3d at 712; *buySAFE*, 765 F.3d at 1351; *Bancorp*, 687 F.3d at 1269; and *CyberSource*, 654 F.3d at 1367.

To the contrary, the claims of the '906 patent address a technological problem—a “growing need for digital data delivery” methods that can account for the proliferation of different and often incompatible devices and file formats for viewing media. Appx64(1:27-28). They provide a technical solution to ensure

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(managing a life insurance policy); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366 (Fed. Cir. 2011) (verifying credit card transactions).

that consumers who begin watching on one device, but then switch to another one with a potentially incompatible technological format—*e.g.*, from a device using QuickTime video format to a device using MPEG video format, Appx69(11:5-13)—can simply pick up watching where they previously left off. *See* Appx4732. The invention, moreover, does so through an ordered arrangement of physical devices like televisions, set-top boxes, personal computers, or handheld devices connected with media-on-demand servers. Appx58; Appx66; Appx1003. And the claims provide a tangible result that can be heard and seen. Indeed, the invention’s whole purpose is to deliver content that can be heard and seen regardless of device or location. Appx64; Appx1003. Delivering media on demand, and pausing and resuming the delivery of media in different formats on different devices, is technological and tangible—no less than the claims in *Diehr*, 450 U.S. at 179 (“method of operating a rubber-molding press”), and *DDR*, 773 F.3d at 1257 (method of creating hybrid web pages).

If, decades ago, an engineer developed a physical converter that allowed VCRs to deliver media on a variety of displays (TVs, projectors, CRTs, etc.), no one would urge that such a device represents a patent-ineligible “abstract idea.” Likewise, no one would make such an argument if the engineer developed the first “pause” button for a VCR, DVD, or DVR player. The result should be no different where, as here, a team of IBM engineers developed a system that does not merely

allow consumers to watch their content on a variety of potentially incompatible device types, but also allows them to start watching on one device, move to another, and resume precisely where they left off. While we may take the availability of multi-format, multi-device, media-on-demand system technology for granted today, it was unknown when the application for the '906 patent was filed in September 2000. Appx57; *see* pp. 6-8, *supra*.

This Court's decision in *DDR* makes this an *a fortiori* case. In *DDR*, the patent concededly addressed "a business challenge (retaining website visitors)" that was "particular to the Internet." 773 F.3d at 1257. The defendant (and the dissent) characterized the idea to which the invention was directed in various ways, including "making two web pages look the same," or giving the merchant's web pages "the same 'look and feel'" as the web page of the third-party who makes the product at issue. *Id.* Even though the invention involved computers and the Internet, the Court concluded that the "claims stand apart": They did not merely "recite the performance of some business practice" that was previously "known," together with "the requirement to perform it on the Internet." *Id.* "Instead, the claimed solution [wa]s necessarily rooted in computer technology to overcome a problem specifically arising in the realm of computer networks." *Id.*

Here, too, the claimed solution is necessarily rooted in computer and server technology. And it overcomes "a problem specifically arising in the realm" of

media-capable devices—the difficulty of providing seamless access to media when customers need to play it on myriad, potentially incompatible platforms, often beginning on one platform, changing locations, and resuming viewing on another platform. And here, unlike in *DDR*, there can be no claim that the inventive concept “is an entrepreneurial rather than a technological one.” *DDR*, 773 F.3d at 1266 (Mayer, J., dissenting). The origins of the problem (proliferating platforms and viewing locations) were technological. And the solution (an adaptation of media-on-demand server technology) is technological as well.

2. The district court reached the opposite result only by changing the subject. Ignoring the terms of the ’906 patent claims—and how the claims’ elements work together as an ordered combination—the court declared that the claims “are directed to the abstract idea of bookmarking across devices.” Appx30. But that characterization—supported by almost no analysis—misses on multiple levels.

First, the ’906 patent is not a “[b]ookmarking patent” directed to “creating a ‘bookmark,’” or to “bookmarking across devices.” Appx29-30. The ’906 patent is expressly directed to a “user controlled multi-device media-on-demand system.” Appx57. The claims first and foremost allow the delivery of media content to different devices that utilize different formats. The system also allows users to begin watching their content on one device, in one format, at one location, and

then—after pausing at a particular point in the program—to resume watching the program at that same point on a different device, in a different format, in a different location. Appx69; Appx4196; Appx4199. But the “bookmark” element is merely one piece in the middle of a multi-step technological method; it can hardly be said that the entire patent claims are “directed” to that single step. In fact, the patent describes a “further embodiment of the invention” that has “no bookmark” at all. Appx69(11:28-40). In that embodiment, “the user can be given the option of estimating a time code” at which to resume watching the program. Appx69(11:39-40). The court’s cursory abstract-idea analysis simply mischaracterizes—indeed, ignores much of—the claims.

That approach cannot be reconciled with *Diehr*. In *Diehr*, the claims had a variety of steps, some of which (such as use of the Arrhenius equation) may not have been patentable standing alone. But the Supreme Court held the claims patentable nonetheless. The claims, it pointed out, were not “directed to a mathematical algorithm or an improved method of calculation” (abstract ideas). 450 U.S. at 181. They were directed to “an improved process for molding rubber articles” (not abstract). *Id.* The same is true here: The ’906 patent does not cover “bookmarking” in the abstract (or even bookmarking on a computer). The claims instead are directed to generating media on demand that works across incompatible

platforms for consumers who move from location to location and from device to device.

In any event, there is nothing abstract about the claimed feature of “bookmarking across devices.” Appx30. A bookmarking feature “specifying a position in the media,” that allows a user to pause delivery of the media, and later to resume delivery at the position specified by the bookmark, is tangible and technological—not abstract and disembodied. Appx69. It requires the storage of specific types of data, in a specific manner, to ensure the new device can resume where the old one left off. Without such a tangible and technological feature, the user of a client device could not stop media delivery and simply restart it later at the same position. Whether found on a 1980s-era tape deck, a 1990s-era VCR, a 2000s-era iPod, or a contemporary tablet or smartphone, features such as fast-forward, rewind, stop, and pause are tangible, technological, and patent-eligible subject-matter. If those features are not abstract, then the bookmarking feature identified by the district court is not either. Indeed, it has the further technological characteristic of working “across devices”—such that a bookmark associated with one media file being delivered to one tangible device can be utilized to view a different transcoded media file on another tangible device using a different format. Appx69-70; Appx4196.

## **B. The '906 Patent Recites an Inventive Concept**

Because the '906 patent claims are not “directed to” an abstract idea, this Court need go no further; the claims are not invalid under § 101. *Alice*, 134 S. Ct. at 2355. But *Alice*’s second step confirms the claims’ validity in any event. The claims, taken as an ordered combination, represent a patent-eligible “application” of any idea—not a claim to an idea itself. *Id.*

1. The claims do not merely identify a goal and then state “do it on a computer.” They recite a specific and novel application of media-on-demand technology using specific elements. For example, claim 1 alone invokes a “first client device . . . associated with a first user”; a “first communications link”; media “configured in a format compatible with identified properties of said first client device”; a “second client device also . . . associated with said first user”; a “second communications link”; media “configured in a format compatible with identified device properties of said second device”; and a “bookmark specifying a position” at which delivery to the “second client device” will begin. Appx69(12:45-61). These elements, considered individually and as an ordered combination, make clear that claim 1 is not directed to an abstraction, but rather to a specific arrangement of physical devices in a media-on-demand system—one unknown in 2000. Appx4199-204; *see* pp. 6-8, *supra*. Claim 5 makes that clearer still, adding additional specific means of implementation. For example, it requires the media-

on-demand server to identify the device properties for the relevant devices, and the use of an “intermediate server” to convert media into a compatible format (*e.g.*, from QuickTime to MPEG, Appx69(11:7-9)) on the fly as the content is streamed. Appx70(13:8-17).

The ’906 patent claims pose no risk of preempting any “building blocks of human ingenuity.” *Alice*, 134 S. Ct. at 2354-55. The specific application of media-on-demand technology does not preempt all use of media-on-demand technology; it does not even preempt all use of media-on-demand technology to pause and resume the delivery of media on different devices. Instead, it covers only the specific application of media-on-demand technology employing at least two distinct client devices (both associated with a single user, and both with identified device properties), two distinct communications links, two distinct media formats, and a bookmark that specifies a position in the media. *See* Appx69(12:45-61); Appx4203-04. This claimed configuration of a user-controlled, multi-device, media-on-demand system is not an *abstract* “building block[] of human ingenuity.” *Alice*, 134 S. Ct. at 2354. It is a particularized media-on-demand system composed of numerous *tangible* building blocks that achieve a particular goal, without preempting other means of achieving that goal. *See* Appx4203-08.

2. While the district court asserted that “the ’906 patent fails to disclose an inventive concept,” it ignored everything in the ’906 patent claims except the



bookmarking feature. Appx30-36. The district court’s analysis was also logically impossible. The court reasoned that, “[w]hile the very idea of allowing multiple-device playback may have been novel at the time of the invention,” the patent contained no “inventive concept” because it did not explain “*how* the claimed method differs from a conventional method for recoding bookmarks for multiple-device playback.” Appx35. But the fact that “allowing multiple-device playback [was] novel at the time of the invention” *necessarily* means that there was no “conventional method” for allowing such multiple-device playback. Appx35-36. It simply makes no sense to conclude, as the district court did, that the ’906 patent claimed only “a conventional method” of making a user-controlled, multi-device, media-on-demand system when that sort of a multi-device system had not been accomplished before. *See id.*; Appx4201-04.

The district court appeared to assume that, because client devices, communications links, and servers were all known in the art, a “novel” combination of these purportedly “conventional” elements could not be patent-eligible. Appx33-35. That assumption was incorrect. The law is clear that—particularly when directed to improving an existing technology—a novel combination of elements is patent-eligible “even though all the constituents of the combination were well known and in common use before the combination was made.” *Diehr*, 450 U.S. at 188. The question under this Court’s precedent is whether the claimed elements “taken

together as an ordered combination . . . recite an invention that is . . . merely the routine or conventional use of” a general computer, such as utilizing “the Internet.” *DDR*, 773 F.3d at 1259. Here, the answer to that question is “no.” The claimed combination of elements “allowing multiple-device playback [was] novel at the time of the invention,” and did not recite the routine or conventional use of the Internet, computers, or prior-art media-on-demand systems. Appx35; Appx4200-02.

Even if that were subject to debate, the district court could not resolve that against the non-moving party on summary judgment. Appx31-34; *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). The district court acknowledged that its step-two inquiry raised factual questions. Appx33. Yet it either ignored or rejected Dr. Shamos’s related factual testimony at every turn. *See* Appx31-35. Dr. Shamos provided extensive testimony explaining why the claimed “media-on-demand system,” “media-on-demand server,” and “client device[s]” are “not general purpose computers,” but are instead “particular machine[s]” and “specialized devices that are integral to carrying out the purpose of the claimed invention of enabling the delivery of media in different formats to different devices with different capabilities over different communications links.” Appx4201. Dr. Shamos also explained why the claimed step of “‘recording a bookmark specifying a position in the media’ requires a fundamental change to the data.” Appx4203. On

summary judgment, the district court was not entitled to sweep that expert testimony aside in favor of its own intuition that the claimed machines are indistinguishable from a “general purpose computer,” Appx31-32, and that the “addition of a bookmark” does not involve a “fundamental alteration” of data, Appx34.

**C. The '906 Patent Claims Improve an Existing Media-On-Demand Technology**

The remainder of *Alice* confirms that the '906 patent's claims are patent-eligible. As *Alice* observes, claims are patent-eligible when they “improve an existing technological process,” 134 S. Ct. at 2358, or “effect an improvement in [a] technology or technical field,” *id.* at 2359. The '906 patent claims do precisely that. The claims effect an improvement in “user/subscriber control over the transmission of digital media” using media-on-demand servers in the technical field of media-on-demand systems. Appx64; Appx69-70; Appx3159; Appx4195.

In the late 1990s, increasing connection speeds and decreasing download times made it possible to deliver large media files over digital networks. Customers sought access to media on their “subscriber terminals” through streaming and downloading. Appx64(2:5-15). The '906 patent provided a significant improvement over those prior systems: It allowed customers to watch programs in different places, at different times, and on different devices that use different formats with different capabilities. Appx3159; Appx4195. Like the claims held patent-eligible in *DDR*, the '906 patent claims are “necessarily rooted in [media-on-

demand] technology in order to overcome a problem specifically arising in the realm of [media-on-demand systems].” 773 F.3d at 1257. As Dr. Shamos explained, the need for a multi-device, multi-format, customer-controlled media-on-demand system “did not exist in the pre-Internet or pre-computer world.” Appx4195. When that need arose, the ’906 patent met it: It overcame the limits of prior “media-on-demand systems by enabling the delivery of the same media in different formats to different devices having different capabilities over different communications links.” Appx4199; Appx4204 (“[the claims] work an actual improvement in media-on-demand systems themselves”). That improvement to an existing technology is patent-eligible under *Alice*, 134 S. Ct. at 2358-59, and *Diehr*, 450 U.S. at 177-78.

The patented invention, moreover, yields concrete results—it does not recite mental steps that are performed faster on a computer. A human mind cannot “configure[.]” a media file “in a format compatible with identified device properties”; it cannot deliver a configured media file over “first [and second] communications links”; it cannot record a bookmark specifying a location “in the media.” Appx4202; Appx69-70. A person armed only with pen, paper, and imagination could not possibly start watching a movie on one device in one format, pause it, and then resume watching the movie from that point on another device in another format. Appx4202; Appx69-70.

The machine-or-transformation test—which remains “a useful and important clue” for determining patent-eligibility, *Bilski*, 561 U.S. at 604—confirms that conclusion. The claims are tied to a particular machine: the claimed media-on-demand system with first and second client devices, first and second communications links, and a media-on-demand server architected in “a particular arrangement that enables the media-on-demand server to perform the specialized function of delivering media to different types of devices depending on the media format the device is capable of receiving.” Appx4201; Appx69-70; Appx57 (“user controlled multi-device media-on-demand system”). The claimed method requires those elements; they thus do more than “play a significant part in permitting the claimed method to be performed.” *SiRF Tech., Inc. v. ITC*, 601 F.3d 1319, 1333 (Fed. Cir. 2010). And the claimed method is undeniably transformative. Media is played across a network and displayed on a device; media is converted to different formats to make that work; and the step of “recording a bookmark specifying a position in the media” requires the creation of new data to record the paused location in the media file. Appx4203. Data is not merely manipulated, reorganized, or collected; it is technologically transformed to be readable by a device for which it previously was unreadable. *Card Verification Solutions, LLC v. Citigroup Inc.*, No. 13-CV-6339, 2014 U.S. Dist. LEXIS 137577, \*13 (N.D. Ill. Sept. 29, 2014).

## **II. The '709 Patent Claims Are Patent-Eligible Under § 101**

As the quantity of available media content has exploded, the need for effective means to find desired content has become acute. The printed TV Guide that was once sufficient was replaced by a scrolling list, which gave way to interactive guides allowing navigation through menus, which was replaced by guides with two-way communications. The '709 patent represents another step forward, allowing interactive programming guides not merely to be responsive tools for finding content, but also proactive devices that affirmatively *propose* content suited to the user's tastes. That invention is patentable for many of the same reasons as the '906 patent.

### **A. The '709 Patent Is Directed to Concrete, Tangible, Interactive Program Guide Technology**

At the first step of the *Alice* test, the '709 patent is directed to improving an inherently concrete and physical instrumentality—a “client-server interactive television program guide.” Appx71. And that is what the claims recite—a “method for use in an interactive program guide system for providing a customized viewing experience to a user.” Appx124. That program guide utilizes tangible equipment to generate tangible results. The viewer uses the system to navigate and locate programs of interest, Appx112(1:27-42), and the system generates specific, customized viewing suggestions the user can see and read, Appx124.

The '709 patent claims provide a specific mechanism for making interactive program guides do something they had never done before: provide personalized viewing recommendations to a user. Appx124. For example, in claim 13, the invention keeps track of what the user has watched and identifies criteria associated with that programming. Appx124(26:19-20). It also stores a viewer preference profile completed by the user. Appx124(26:21-22). And it combs through programs not yet watched, using the preference profile and viewing history, to identify a personalized recommendation that corresponds with historical habits and viewing preferences. Appx124(26:26-29).

The '709 patent thereby provides an interactive guide that does something never done before—it uses technology to predict what a particular user might want to see and to suggest options. Today, interactive program guides that provide personal viewing recommendations based on viewing history and personal preferences may be taken for granted as part of our daily lives. But in 1998, they were unknown. Appx71; Appx112. An interactive program guide that provides personal viewing recommendations based on viewing history and personal preferences is not the mere calculation of a number, *Benson*, 409 U.S. at 73; *Flook*, 437 U.S. at 596, or the performance of a fundamental economic practice, *Bilski*, 561 U.S. at 615, or a business method done on a computer, *Alice*, 134 S. Ct. at 2352. It is the next step in interactive guides—archiving and categorizing a user's viewing

history as claimed by the patent and using the methods claimed in the patent to make proactive suggestions for future viewing.

As the ITC found, “[n]one of the asserted claims covers unpatentable abstract ideas. The claims are all directed to particular applications for interactive program guides that deal with video programming, such as movies and television programs.” Appx7254. The ’709 patent claims pass step one: they are directed to a tangible client-server interactive program guide system, not to an abstract idea. These claims are thus patent-eligible under § 101. *Diehr*, 450 U.S. at 188; *Alice*, 134 S. Ct. at 2354.

The district court’s contrary ruling defies the ’709 patent’s express terms. The district court declared that the ’709 patent is directed to “the abstract idea of generating viewing recommendations.” Appx28. But that is naked assertion—it is unsupported by the ’709 patent’s specification, the claims’ preambles, or the claim elements read in context. Appx27-28. The specification, claim preambles, and claim elements make clear that the ’709 patent claims are not simply directed to the disembodied idea of “generating viewing recommendations.” Rather, they encompass “an interactive program guide system”—an existing technology—that *also* has the novel capability to generate “personal viewing recommendations” in order to “provid[e] a customized viewing experience to a user.” Appx124; Appx112; Appx71. There is nothing abstract or disembodied about an interactive



programming guide, much less one that provides users with customized viewing recommendations based on specific criteria. *Cf. Diehr*, 450 U.S. at 179, 187 (finding that “a method of operating a rubber-molding press” that used a mathematical formula was directed to “a process of curing synthetic rubber,” not to the mathematical formula).

**B. The '709 Patent Claims Identify an Inventive Concept**

1. Taken both individually and as an ordered combination, the recited steps of the '709 patent's claims represent a patent-eligible “application” of an innovative approach, not an impermissible effort to patent an abstraction. 134 S. Ct. at 2357. The claim has specific elements. It requires a “viewing history database” with “program listings and associated program criteria” that tracks a user's viewing history. Appx124(26:19-20). It requires a “user preference profile,” Appx124(26:23-24), set up by the user to identify preference levels for series, genres, channels, actors, actresses, ratings, and other types of preference attributes, Appx124(14:18-16:67). It has a “program listing database” from which a “set of programs” that the user has “not yet watched” can be determined. Appx124(26:24-25). And it generates a “personal viewing recommendation,” which it provides to the user. Appx124(26:26-28); Appx119(15:5-12); Appx121(19:18-20:38). These elements confirm that claim 13 is not directed to an

abstraction, but to a specific arrangement of tangible objects and machines in an interactive program guide system.

Dr. Shamos confirmed that the elements are not abstract. The “user preference profile” is constructed based on interactions with the viewer. The “viewing history database” is a specifically “construct[ed] relational database” consisting of programmed “expressions from the viewing histories that define expressions for the program categories and ratings for programs that users have watched, scheduled reminders for, searched for, or ordered the most.” Appx4227; Appx121(20:26-31). And a “personal viewing recommendation” is a tangible “visual listing” that is “displayed on the user’s physical equipment.” Appx4224-26. The ITC thus correctly concluded that “[t]he claims are all directed to particular *applications* for interactive program guides that deal with video programming, such as movies and television programs.” Appx7254 (emphasis added).

The ’709 patent claims also pose no risk of preempting any “building blocks of human ingenuity.” *Alice*, 134 S. Ct. at 2354-55. This particular application of interactive program guide technology does not preempt all such guides, or all technology used to generate viewing recommendations. Appx7255. It covers only interactive guides specifically configured to invoke a “viewing history database” that includes “program listings and associated program criteria”; a “user preference profile”; and a “program listings database” from which “a set of programs not yet

watched” can be determined. Appx124. Interactive guides that make recommendations based on other factors (just user preferences, or just viewing history, or “‘favorite’ already-watched programs”) remain free for all to utilize. Appx4230.

2. The district court nonetheless declared “that no inventive concept is disclosed” because, in its view, “the claimed steps—whether considered individually or as part of an ordered combination—do not go beyond routine, conventional means of generating viewing recommendations.” Appx29. Once again, that makes no sense. Generating viewing recommendations was not a “routine, conventional” activity for interactive program guides back in 1998. Quite to the contrary, the court acknowledged that “Rovi may be correct” that generating such recommendations “was novel at the time[.]” Appx27. Given that interactive guides did not generate recommendations in 1998, it is impossible to see how there could have been a “routine, conventional means” for them to do so.

The question thus remains whether the claimed elements “taken together as an ordered combination . . . recite an invention that is . . . merely the routine or conventional use” of computers or the Internet. *DDR*, 773 F.3d at 1259. Here, the claimed combination of elements—reciting an interactive program guide that invokes viewing history and a user preference profile, and a list of programs not yet watched to generate an individualized viewing recommendation—was novel at the time of the invention. Appx4230. It was “a new, unconventional, and useful

improvement” over the prior technology. *Id.* But even if that issue could be debated, it certainly was not so clear that the district court could resolve it against Rovi—the non-moving party—on summary judgment.

The ITC, moreover, had found that the ’709 patent claims are tied to “a particular type of machine” and to “particular devices” in such a way that they “do not preempt any abstract idea.” Appx7255-56. “The claims,” the ITC ruled, “are properly directed to a particular application, an ‘interactive program guide system.’” Appx7255; Appx7254-55 (“The ’709 patent claims are specifically directed to client-server systems wherein an interactive program guide client device works in tandem with a remote interactive program guide server.”). The district court’s effort to divorce the claims from their specific elements and the specific technology was error.

### **C. The ’709 Patent Claims Improve an Existing Technology**

The effort to summarily dismiss the ’709 patent as an “abstract” idea defies the fundamental nature of that patent. The ’709 patent takes an existing technology—interactive program guides—and makes it better. The patent itself could not be more explicit. Since the mid-1990s, it explains, client-server interactive guides “allow[ed] users to navigate through television program listings using a remote control.” Appx112(1:27-29). The Rovi inventors took that existing technology—which previously had “limited” functionality “due to [its] limited

use of the resources of the server,” Appx112(1:42-44)—to a whole new level. Leveraging “server resources,” the Rovi team created “an interactive television program guide system” that does not merely respond passively to customer navigational commands but actively proposes available programming that corresponds to viewing habits and preferences for particular users. Appx4222. That “new, unconventional, and useful improvement in interactive program guide technology” is precisely the sort of enhancement the patent system is designed to promote and protect. Appx4230.

The first electronic television program guide, which simply comprised a scrolling list of available channels and related programming information, was a visible, tangible, patent-eligible technology. The first interactive program guide—a significant advance despite its limited functionality—was likewise a visible, tangible, patent-eligible technology. The ’709 patent takes that interactive program guide and makes it more useful by enabling it to be proactive. If the earlier interactive program guides were patent-eligible, and they were, then the ’709 patent’s improved interactive guide must be patent-eligible subject matter as well. Indeed, interactive program guides are transformative machines. They take a variety of inputs, gathering data from a preference profile and monitoring viewing habits, to produce a useful and tangible output—specific recommendations consumers can see and utilize. *Cf. Intellectual Ventures I LLC v. Mfrs. & Traders*

*Trust Co.*, 76 F. Supp. 3d 536, 547 (D. Del. 2014) (finding patent-eligible a claim “for selectively tailoring information delivered to an Internet user depending upon the particular needs of the user”).

### **CONCLUSION**

The district court’s judgment should be reversed.

Date: December 14, 2015

Respectfully submitted,

/s/ Roderick G. Dorman

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# **ADDENDUM**



UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA

NETFLIX, INC.,  
Plaintiff,  
v.

ROVI CORPORATION, et al.,  
Defendants.

Case No. 11-cv-6591 PJH

**JUDGMENT**

This action came on for hearing before the court, and the issues having been duly heard and the court having granted Netflix's motion for summary judgment, it is Ordered and Adjudged that declaratory judgment is entered in favor of Netflix on its claim of invalidity of the patents-in-suit, and that the remaining claims for infringement and for declaratory judgment of non-infringement are dismissed as moot.

**IT IS SO ORDERED.**

Dated: July 15, 2015



PHYLLIS J. HAMILTON  
United States District Judge

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA

NETFLIX, INC.,  
Plaintiff,

v.

ROVI CORPORATION, et al.,  
Defendants.

Case No. 11-cv-6591 PJH

**ORDER GRANTING MOTION FOR  
SUMMARY JUDGMENT**

Plaintiff's motion for summary judgment came on for hearing before this court on March 25, 2015. Plaintiff (and counter-defendants) Netflix, Inc. ("plaintiff" or "Netflix") appeared through its counsel, Ashok Ramani, Tina Sessions, Ed Bayley, Michael Kwun, and Sharif Jacob. Defendants (and counter-claimants) Rovi Corporation, Rovi Technologies Corporation, Rovi Guides, Inc., United Video Properties, Aptiv Digital Inc., and Starsight Telecast, Inc. (referred to collectively as "defendants" or "Rovi") appeared through their counsel, Yar Chaikovsky, Hong Lin, and Amol Parikh. Having read the papers filed in conjunction with the motion and carefully considered the arguments and the relevant legal authority, and good cause appearing, the court hereby GRANTS plaintiff's motion as follows.

**BACKGROUND**

This is a patent case. Plaintiff Netflix originally filed a declaratory judgment action against defendants, seeking declaratory judgments of non-infringement and invalidity of five Rovi patents. Rovi then filed counterclaims asserting infringement of those five patents, as well as three additional patents (for a total of eight patents). Netflix then

1 answered Rovi's counterclaims with additional declaratory judgment counterclaims, for  
2 non-infringement and invalidity of the three newly-asserted patents.

3 Three of the patents have since dropped out of the suit, leaving five remaining  
4 patents, all of which are at issue on this motion: (1) U.S. Patent No. 6,898,762 ("the '762  
5 patent"); (2) No. 7,065,709 ("the '709 patent"); (3) No. 7,103,906 ("the '906 patent"); (4)  
6 No. 7,945,929 ("the '929 patent"); and (5) No. 7,974,962 ("the '962 patent"). Four of  
7 these patents (the '762, '709, '929, and '962 patents) are related to interactive program  
8 guides, while the fifth (the '906 patent) is related to creating bookmarks for resuming  
9 playback across different devices.

10 For ease of reference in this order, the court will sometimes refer to the '762 and  
11 the '709 patents as the "Viewing History patents," as they relate to storing a user's  
12 viewing history and making recommendations based on that history; and will refer to the  
13 '929 and the '962 patents as the "Category patents," as they relate to the use of  
14 categories to organize programs. The court will refer to the '906 patent as the  
15 "Bookmarking patent."

16 Netflix's original complaint was filed on December 21, 2011. In May 2012, the  
17 court stayed the case pending the outcome of an International Trade Commission ("ITC")  
18 investigation. In July 2014, after the ITC proceedings had concluded, the parties  
19 stipulated to lift the stay, and agreed to a schedule for claim construction. Netflix then  
20 filed this motion for summary judgment under § 101, intending for it to be heard before  
21 claim construction, but the court consolidated the two hearings. Having recently issued a  
22 claim construction order, the court now turns to Netflix's motion for summary judgment.

## 23 DISCUSSION

### 24 A. Legal Standards

#### 25 1. Motions for Summary Judgment

26 A party may move for summary judgment on a "claim or defense" or "part of . . . a  
27 claim or defense." Fed. R. Civ. P. 56(a). Summary judgment is appropriate when there  
28 is no genuine dispute as to any material fact and the moving party is entitled to judgment

as a matter of law. Id.

A party seeking summary judgment bears the initial burden of informing the court of the basis for its motion, and of identifying those portions of the pleadings and discovery responses that demonstrate the absence of a genuine issue of material fact. Celotex Corp. v. Catrett, 477 U.S. 317, 323 (1986). Material facts are those that might affect the outcome of the case. Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986). A dispute as to a material fact is “genuine” if there is sufficient evidence for a reasonable jury to return a verdict for the nonmoving party. Id.

Where the moving party will have the burden of proof at trial, it must affirmatively demonstrate that no reasonable trier of fact could find other than for the moving party. Soremekun v. Thrifty Payless, Inc., 509 F.3d 978, 984 (9th Cir. 2007). On an issue where the nonmoving party will bear the burden of proof at trial, the moving party may carry its initial burden of production by submitting admissible “evidence negating an essential element of the nonmoving party's case,” or by showing, “after suitable discovery,” that the “nonmoving party does not have enough evidence of an essential element of its claim or defense to carry its ultimate burden of persuasion at trial.” Nissan Fire & Marine Ins. Co., Ltd. v. Fritz Cos., Inc., 210 F.3d 1099, 1105-06 (9th Cir. 2000); see also Celotex, 477 U.S. at 324-25 (moving party can prevail merely by pointing out to the district court that there is an absence of evidence to support the nonmoving party's case).

When the moving party has carried its burden, the nonmoving party must respond with specific facts, supported by admissible evidence, showing a genuine issue for trial. Fed. R. Civ. P. 56(c), (e). But allegedly disputed facts must be material – the existence of only “some alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment.” Anderson, 477 U.S. at 247-48.

When deciding a summary judgment motion, a court must view the evidence in the light most favorable to the nonmoving party and draw all justifiable inferences in its favor. Id. at 255; Hunt v. City of Los Angeles, 638 F.3d 703, 709 (9th Cir. 2011).

2. Invalidity under Section 101

Section 101 of the Patent Act provides that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. The Supreme Court has found an important implicit exception to the boundaries of patentability, holding that “laws of nature, natural phenomena, and abstract ideas are not patentable.” Diamond v. Diehr, 450 U.S. 175, 185 (1981).

The line between an unpatentable abstract idea and a patentable invention has not always been a bright one, especially with regard to process patents (also called method patents). Courts have adopted various tests to delineate the boundaries of patentability, and in recent years, the tests have been revisited. The recent line of cases began in 1998, when the Federal Circuit held that a process could be patentable as long as it produced a “useful, concrete, and tangible result.” State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1373 (Fed. Cir. 1998).

The “useful, concrete, and tangible result” test persisted until 2008, when an en banc panel of the Federal Circuit rejected it, and instead held that a “claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.” In re Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008). The Federal Circuit further held that this “machine-or-transformation” test was “the sole test governing § 101 analyses.” Id. at 955.

The Bilski case then reached the Supreme Court, which took a different view of the “machine-or-transformation” test. Rather than being the “sole test governing § 101 analyses,” the Court held that the test was merely an “important and useful clue” regarding patentability. Bilski v. Kappos, 561 U.S. 593, 603 (2010). Instead of focusing exclusively on the machine-or-transformation test, the Bilski Court looked more broadly at whether the patent-in-suit, covering a method for buyers and sellers of commodities to hedge against the risk of price fluctuations, was an attempt to claim an abstract idea.

1 The Bilski Court ultimately determined that the patent covered “the basic concept  
2 of hedging, or protecting against risk,” which was an “unpatentable abstract idea,” and in  
3 fact, was a “fundamental economic practice long prevalent in our system of commerce  
4 and taught in any introductory finance class.” 561 U.S. at 611. To find the patent valid  
5 would “pre-empt the use of this approach in all fields, and would effectively grant a  
6 monopoly over an abstract idea.” Id. at 612. The Court then made clear that “limiting an  
7 abstract idea to one field of use or adding token postsolution components” would not turn  
8 an unpatentable abstract idea into a patentable method, noting that certain of the patent’s  
9 claims “attempt to patent the use of the abstract idea of hedging risk in the energy  
10 market” (as opposed to all markets) or “instruct the user of well-known random analysis  
11 techniques to help establish some of the inputs into the equation,” neither of which was  
12 sufficient to make the invention patentable. Id.

13 Two years later, in Mayo Collaborative Services v. Prometheus Laboratories, Inc.,  
14 the Court shed further light on the boundaries of patentability under § 101. 132 S.Ct.  
15 1289 (2012). In Mayo, the Court was faced with patents on a process for helping doctors  
16 determine whether drug dosages for patients with autoimmune diseases were too low or  
17 too high. The key question before the Court was whether the claims covered an  
18 unpatentable law of nature (analogous to the Bilski Court’s consideration of whether the  
19 claims covered an unpatentable abstract idea).

20 Mayo cited previous Supreme Court precedent warning against “upholding patents  
21 that claim processes that too broadly preempt the use of a natural law,” and “insisting that  
22 a process that focuses upon the use of a natural law also contain other elements or a  
23 combination of elements, sometimes referred to as an ‘inventive concept,’ sufficient to  
24 ensure that the patent in practice amounts to significantly more than a patent upon the  
25 natural law itself.” 132 S.Ct. at 1294 (internal citations omitted). In essence, the Court  
26 asked this question: besides the natural law itself, “[w]hat else is there in the claims  
27 before us?” Id. at 1297. In answering that question, the Mayo Court found that “the  
28 claims inform a relevant audience about certain laws of nature; any additional steps

1 consist of well-understood, routine, conventional activity already engaged in by the  
2 scientific community; and those steps, when viewed as a whole, add nothing significant  
3 beyond the sum of their parts taken separately.” Id. at 1298.

4 The Mayo Court emphasized that the refusal to allow patents on laws of nature  
5 arose out of a “concern that patent law not inhibit further discovery by improperly tying up  
6 the future use of laws of nature.” 132 S.Ct. at 1301. While “rewarding with patents those  
7 who discover new laws of nature and the like might well encourage their discovery, those  
8 laws and principles, considered generally, are the basic tools of scientific and  
9 technological work,” and allowing patents that “tie up their use will inhibit future innovation  
10 premised upon them, a danger that becomes acute when a patented process amounts to  
11 no more than an instruction to ‘apply the natural law.’” Id.

12 Most recently, in Alice Corp. Pty. Ltd. v. CLS Bank International, the Court made  
13 clear that the two-step approach set forth in Mayo applied not only to patents relating to  
14 natural laws, but also to patents relating to abstract ideas. Alice, 134 S.Ct. 2347 (2014).  
15 The Alice Court described Mayo as setting forth “a framework for distinguishing patents  
16 that claim laws of nature, natural phenomena, and abstract ideas from those that claim  
17 patent-eligible applications of those concepts,” and described the framework as follows:  
18 “First, we determine whether the claims at issue are directed to one of those patent-  
19 ineligible concepts. If so, we then ask ‘what else is there in the claims before us?’” Alice,  
20 134 S.Ct. at 2355 (internal citations omitted). The Alice Court then explained that “[w]e  
21 have described step two of this analysis as the search for an ‘inventive concept’ – i.e., an  
22 element or combination of elements that is sufficient to ensure that the patent in practice  
23 amounts to significantly more than a patent upon the ineligible concept itself.” Id.  
24 (internal citations omitted).

25 The Alice Court then applied that two-part test to the patents before it, which  
26 covered a computerized method for mitigating “settlement risk,” described as “the risk  
27 that only one party to an agreed-upon financial exchange will satisfy its obligation.”  
28 Specifically, the claimed processes were designed to “facilitate the exchange of financial



obligations between two parties by using a computer system as a third-party intermediary.” The computer system would track each party’s ability to satisfy its financial obligations, and would ultimately use that data to provide instructions to each party for carrying out the proposed transactions, thus mitigating the risk that only one party would perform the agreed-upon exchange.

On the first step of the Mayo test, the Alice Court found that the patents were directed to the idea of intermediated settlement, which was an abstract idea. Thus, the Court moved to the second step of the test, and asked whether the claims contained an “inventive concept” that was “sufficient to transform the claimed abstract idea into a patent-eligible application.”

The Alice Court ultimately concluded that the patents’ claims did not contain such an “inventive concept,” and while the opinion did not describe the type of disclosures that would be sufficient to constitute an inventive concept, it did give clear examples of the types of disclosures that were not sufficient.

First, Alice followed the Mayo Court in holding that “[s]tating an abstract idea while adding the words ‘apply it’ is not enough for patent eligibility.” 134 S.Ct. at 2358 (internal citation and quotations omitted). Also insufficient is “limiting the use of an abstract idea to a particular technological environment.” Id.

Combining those two principles, the Alice Court held that “stating an abstract idea while adding the words ‘apply it with a computer’ simply combines those two steps, with the same deficient result.” 134 S.Ct. at 2358. Thus, “the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” Id. The Court noted that such a conclusion “accords with the preemption concern that undergirds our § 101 jurisprudence.” Id. In other words, simply adding a “wholly generic computer implementation” did not meaningfully limit the scope of a patent, and in practice, would lead to the same result as patenting an abstract idea itself.

In reaching its conclusion, the Alice Court demonstrated the shortcomings of the “machine-or-transformation” test. While a computer (even a generic one) is undoubtedly



1 a “machine,” its inclusion in a patent claim cannot be sufficient for § 101 purposes, as it  
2 would allow an applicant to “claim any principle of the physical or social sciences by  
3 reciting a computer system configured to implement the relevant concept,” thereby  
4 “eviscerating the rule that laws of nature, natural phenomena, and abstract ideas are not  
5 patentable.” 134 S.Ct. at 2359 (internal citations omitted).

6 In a similar vein, the Alice Court held that the inclusion of “well-understood,  
7 routine, conventional activities previously known to the industry” did not suffice as the  
8 “inventive concept” necessary for patentability. Just as the addition of a generic  
9 computer to an abstract idea would not place meaningful limits on a patent’s scope, the  
10 addition of generic computer functions would similarly fail to provide any such limits.

11 In sum, the Alice Court found that the “claims at issue amount to nothing  
12 significantly more than an instruction to apply the abstract idea of intermediated  
13 settlement using some unspecified, generic computer.” 134 S.Ct. at 2360. Under  
14 previous precedent, “that is not ‘enough’ to transform an abstract idea into a patent-  
15 eligible invention.” Id. (emphasis in original).

16 By clarifying that the addition of a generic computer was not enough for § 101  
17 patentability, Alice has had a significant impact on software patents. In Alice’s wake, the  
18 Federal Circuit and numerous district courts have wrestled with the issue of whether  
19 various software patents disclose the “inventive concept” required for patentability.  
20 Having reviewed the cases cited in the parties’ papers, the court finds two post-Alice  
21 Federal Circuit cases particularly useful for discerning the boundaries between a software  
22 patent that merely discloses an unpatentable abstract idea and one that discloses a  
23 patentable invention.

24 The first of these cases, Ultramercial, Inc. v. Hulu, LLC, involved a patent covering  
25 a method for monetizing and distributing copyrighted products over the Internet. 772  
26 F.3d 709 (Fed. Cir. 2014). Specifically, the claimed method allowed a user to view  
27 copyrighted media (such as a television show) over the Internet, for no charge, in  
28 exchange for viewing an advertisement.

1 The Ultramercial patentee maintained that its patent covered a “specific method of  
2 advertising and content distribution that was previously unknown and never employed on  
3 the Internet before,” and thus was not the type of “well-known” and “routine” activity  
4 rejected in Alice. 772 F.3d at 714. The patentee further argued that its claimed invention  
5 “extends beyond generic computer implementation of [an] abstract idea.” Id. In support  
6 of its argument, the patentee pointed to the detailed eleven-step process disclosed in the  
7 patent:

8 (1) receiving the copyrighted media from a content provider, (2) selecting an  
9 ad, (3) offering the media on the Internet, (4) restricting public access to the  
10 media, (5) offering the media to the customer in exchange for watching the  
11 selected ad, (6) receiving a request to view the ad from a user, (7)  
facilitating display of the ad, (8) allowing the consumer to access the media,  
(9) allowing the consumer access to the media if the ad is interactive, (10)  
updating the activity log, and (11) receiving payment from the ad sponsor.

12 Id. at 714-15.

13 The Ultramercial court agreed that these steps added “a degree of particularity,”  
14 but ultimately found that they still described “only the abstract idea of showing an  
15 advertisement before delivering free content.” 772 F.3d at 715. Thus, under the first step  
16 of Alice, the patent was indeed directed towards an abstract idea.

17 The Ultramercial court then asked whether the claims “did significantly more than  
18 simply describe that abstract method,” i.e., whether the claims disclosed an “inventive  
19 concept.” It cited Alice and Mayo’s teaching that a claim that “recites an abstract idea  
20 must include additional features to ensure that the claim is more than a drafting effort  
21 designed to monopolize the abstract idea,” and that the “additional features” must be  
22 “more than well-understood, routine, conventional activity.” 772 F.3d at 715 (internal  
23 citations omitted).

24 Applying those teachings, the Ultramercial court found the patent invalid, as “the  
25 claims simply instruct the practitioner to implement the abstract idea with routine,  
26 conventional activity.” 772 F.3d at 715. Regardless of whether the eleven recited steps  
27 were viewed individually or as a whole, they did not “transform the nature of the claim into  
28 patent-eligible subject matter.” Instead, the “claims’ sequence of steps comprises only

1 conventional steps, specified at a high level of generality, which is insufficient to supply  
2 an inventive concept.” Id. at 716. While the court acknowledged that “some of the  
3 eleven steps were not previously employed in this art,” it held that was “not enough –  
4 standing alone – to confer patent eligibility.” Id.

5 In the second Federal Circuit case, DDR Holdings, LLC v. Hotels.com, L.P., the  
6 court upheld the patentability of a software patent under Alice. 773 F.3d 1245 (Fed. Cir.  
7 2014). The DDR patent sought to solve a problem that arose when website visitors  
8 clicked on an advertisement on a “host website.” The user would be automatically  
9 transported away from the host website and taken to the advertiser’s website, which  
10 meant that the host website lost that website visitor, and that the user’s experience was  
11 disrupted, making them less likely to purchase a product from the advertiser. The patent  
12 disclosed a method for generating a “hybrid website” – which replicated the “look and  
13 feel” of the host website, but contained the relevant product information for the  
14 advertiser’s website, and even enabled the web user to purchase products from the  
15 advertiser without needing to visit the advertiser’s website.

16 The DDR court did not expressly state that it found that the patent was directed to  
17 an abstract idea (though the opinion suggests as much). Regardless, DDR moved to  
18 step two of the Alice analysis, and found that there was an inventive concept, as the  
19 claims “do not attempt to preempt every application of the idea of increasing sales by  
20 making two web pages look the same,” and instead recited a “specific way to automate  
21 the creation of a composite web page.” 773 F.3d at 1259. The DDR court expressly  
22 distinguished Ultramercial, holding that the DDR patent’s claims were “different enough  
23 from those in Ultramercial because they do not broadly and generically claim ‘use of the  
24 Internet’ to perform an abstract business practice (with insignificant added activity).” Id.  
25 at 1258. Instead, by disclosing a “specific way” to create composite web pages, the  
26 patent constituted “more than a drafting effort designed to monopolize the abstract idea,”  
27 and thus, contained the required “inventive concept” required for patentability under  
28 § 101. Id. at 1259 (citing Alice, 134 S.Ct. at 2357).

1           What stands out from the Alice/Mayo line of cases is the courts' focus on  
2           preemption as the key concern underlying section § 101 analyses. This theme of  
3           preemption runs throughout Alice and Mayo, and is especially apparent when viewing  
4           Ultramercial and DDR together. Notably, though the courts in both Ultramercial and DDR  
5           appear to have concluded that the patents at issue were directed towards abstract ideas,  
6           the DDR court found that the patent disclosed an "inventive concept," whereas the  
7           Ultramercial court found otherwise. In so finding, the DDR court did not focus on the  
8           novelty of the disclosed invention, but instead hinged its ruling on the fact that the claims  
9           did "not attempt to preempt every application of the idea," and instead covered only one  
10          "specific way to automate the creation of a composite web page." 773 F.3d at 1259. In  
11          contrast, the patent at issue in Ultramercial appeared to be a "drafting effort designed to  
12          monopolize the abstract idea itself." 772 F.3d at 716.

13          In other words, the hallmark of the "inventive concept" test is whether the patentee  
14          has added something to the claims to limit their scope, so that they do not monopolize  
15          the entire abstract idea to which the claims are directed. This accords with the purpose  
16          of section 101's carve-outs for abstract ideas, laws of nature, and physical phenomena,  
17          which is to "ensure that the patent in practice amounts to significantly more than a patent  
18          upon the ineligible concept itself." Alice, 134 S.Ct. at 2355. In articulating the "inventive  
19          concept" requirement, the Mayo Court heeded prior Court cases which "warn us against  
20          upholding patents that claim processes that too broadly preempt the use of" an ineligible  
21          concept, such as an abstract idea. Mayo, 132 S.Ct. at 1294. In that sense, the search  
22          for an "inventive concept" can also be thought of as a search for a "limiting concept" –  
23          something that restricts the scope of the claims, ensuring that the patent does not cover  
24          the entirety of the abstract idea.

25          This understanding of an "inventive concept" as akin to a "limiting concept" is in  
26          line with the courts' rejection of the patents at issue in Mayo and Alice. In Mayo, the  
27          Court held that the addition of "well-understood, routine, conventional activity already  
28          engaged in by the scientific community" did not serve to provide the required "inventive

concept.” 132 S.Ct. at 1298. In other words, by disclosing only run-of-the-mill steps, the claims did not meaningfully restrict the scope of the patent. Similarly, in Alice, the Court held that merely stating an abstract idea and adding the words “apply it with a computer” did not suffice as an “inventive concept,” because a “wholly generic computer implementation is not generally the sort of ‘additional feature’ that provides any practical assurance that the process is more than a drafting effort designed to monopolize the abstract idea itself.” 134 S.Ct. at 2358. If the Alice patentee had added something more to the claims, beyond the mere use of a computer, to ensure that the claims covered a specific application of the abstract idea (rather than the idea itself), it could have been patent-eligible under § 101.

Notably, the search for an “inventive concept” places no importance on the novelty of the abstract idea. A novel abstract idea is still an abstract idea, and is therefore unpatentable. Just as “Einstein could not patent his celebrated law that  $E=mc^2$ ,” despite it being a new discovery, an inventor cannot patent any new abstract idea that he discovers. See Diamond, 450 U.S. at 185, 190 (“The question therefore of whether a particular invention is novel is wholly apart from whether the invention falls into a category of statutory subject matter.”).

Thus, at the second step of the Alice/Mayo test, after a court has determined that the patent is directed towards an abstract idea, the key question is whether the claims add something to the abstract idea so that the patent covers a specific application of the abstract idea, rather than the idea itself. See, e.g., Accenture Global Services, GmbH v. Guidewire Software, Inc., 728 F.3d 1336, 1341 (Fed. Cir. 2013) (if a patent is directed at an abstract idea, the court must then “determine whether additional substantive limitations narrow, confine, or otherwise tie down the claim so that, in practical terms, it does not cover the full abstract idea itself.”). This understanding of the second Alice/Mayo step is reflected in the DDR decision, which upheld a patented process only after finding that “the claims at issue do not attempt to preempt every application of the idea” embodied in the patents, and instead were limited to “a specific way” of

1 accomplishing the general concept. DDR, 773 F.3d at 1259.

2 Of the district court cases decided post-Alice, the discussion of the “inventive  
3 concept” in Caltech v. Hughes Communications is particularly helpful. 59 F.Supp.3d 974  
4 (C.D. Cal. 2014). Caltech is also one of the few post-Alice cases to uphold the validity of  
5 a software patent, making it especially useful for discerning the boundaries of § 101.

6 Caltech involved patents covering processes for the encoding and decoding of  
7 data for error correction. At the first Alice/Mayo step, the court found that the patents  
8 were indeed directed to an abstract idea. The court then observed that, if the patent  
9 sought to claim those essential concepts, without any limiting principle, it would “threaten  
10 to preempt the entire field of error correction.” 59 F.Supp.3d at 993. Thus, as part of the  
11 second Alice step, the Caltech court sought to determine whether the claims “contain  
12 meaningful limitations that represent sufficiently inventive concepts.” Id. at 994.

13 Ultimately, the Caltech court did find an inventive concept, noting that the patents  
14 contained steps that were not “necessary or obvious tools for achieving error correction,”  
15 and thus “ensure that the claims do not preempt the field of error correction.” 59  
16 F.Supp.3d at 994. By disclosing “unconventional” techniques for error correction that  
17 were “narrowly defined,” “tied to a specific error correction process,” and “not necessary  
18 or obvious tools for achieving error correction,” the patents did not preempt the field of  
19 error correction, as any conventional, well-understood, and routine methods of error  
20 correction remained outside of the patents’ boundaries. Id. at 994-996.

21 The determination of whether an asserted claim is invalid for lack of subject matter  
22 patentability under § 101 is a question of law. See In re Comiskey, 554 F.3d 967, 975  
23 (Fed. Cir. 2009). A patent is presumed to be valid by statute, 35 U.S.C. § 282; therefore,  
24 a patent challenger bears the burden of proving invalidity by clear and convincing  
25 evidence. See Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1359 (Fed. Cir. 2007). This  
26 standard of proof applies equally at summary judgment. See National Presto Indus. v.  
27 West Bend Co., 76 F.3d 1185, 1189 (Fed. Cir. 1996).

B. Legal Analysis

With the above principles in mind, the court must now apply the two-part Alice/Mayo test to the five patents at issue in this suit. As mentioned above, the court finds it helpful to consider the patents as part of three different groups: the Category patents, the Viewing History patents, and the Bookmarking patent. The court will address each group in turn.

1. Category patents ('929 patent and '962 patent)

a. '929 patent

The '929 patent covers the use of “combination categories” to organize various programs – in other words, instead of using only “simple” categories such as “comedy” or “drama” to classify movies, this patent covers categorizing programs using “combination categories,” such as “sports dramas,” or “romantic comedies,” or even “critically-acclaimed foreign animated movies featuring strong female leads and set in the 1950s.”

In its motion, Netflix cites claim 11 as representative of the '929 patent, and Rovi's brief primarily discusses claim 11 and claim 14. Claim 11 reads as follows:

A system for locating programs of interest to a user, the system comprising:

a receiver that receives a plurality of program listings, wherein at least one of the program listings is associated with two or more simple categories; and

a processor that generates at least one combination category by:

identifying the two or more simple categories associated with the at least one program listing; and

combining at least a subset of the identified simple categories associated with the at least one program listing into the at least one combination category, wherein the combination category comprises more than one of the identified simple categories.

Claim 14 is dependent on claim 13, which is dependent on claim 12, which is in turn dependent on claim 11. Claims 12, 13, and 14 read as follows:

12. The system of claim 11, wherein the processor is configured to combine at least a subset of the identified simple categories associated with



the at least one program listing into the at least one combination category by:

combining the identified simple categories into groups of two or more of the identified simple categories; and

determining, for each of the groups of simple categories, whether the respective group is contained within a list of supported categories;

wherein the at least one combination category comprises one of the groups of simple categories contained within the list of supported categories.

13. The system of claim 12, wherein the processor is further configured to:

automatically identify a plurality of simple categories that are of high interest to the user; and

generate the list of supported categories from the plurality of simple categories that are of high interest to the user.

14. The system of claim 13, wherein the processor is configured to automatically identify a plurality of simple categories that are of high interest to the user by identifying a first simple category that received more user selections than a second simple category.

Addressing the first Alice/Mayo step, Netflix describes these claims as being directed to the abstract idea of “categorizing shows using combination categories,” and Rovi does not meaningfully challenge this assertion in its opposition, instead arguing that the use of combination categories was unknown in the prior art at the time. See Dkt. 121 at 22 (describing the ’929 patent’s “critical aspect” as “generating ‘combination categories’ from program listings associated with simple categories, a problem which the prior art 17 years ago had not solved.”) (emphasis in original). Rovi further argues that the novelty of combination categories makes the ’929 patent “fundamentally different from the abstract, longstanding business practice” at issue in Alice. Dkt. 121 at 23.

However, the issue of whether combination categories were known in the prior art does not say anything about whether the claims are directed to an abstract idea – and it seems apparent that the idea of using composite categories to define shows is indeed abstract, even if it was wholly novel at the time of filing. The fact that dependent claims



13 and 14 add the element of generating recommendations using those combination categories does not render the claims any less abstract.

Thus, the court moves to step two of the Alice/Mayo test, and asks whether the '929 patent discloses an inventive concept. Rovi analogizes this case to Caltech, in which the court found that the patent disclosed “a unique computing solution that addresses a unique computing problem.” However, Rovi seems to ignore that the Caltech court focused on the narrow nature of the claimed solution in finding it patentable – emphasizing that the claims contained “meaningful limitations,” “ensur[ing] that the claims do not preempt the field of error correction.” Caltech, 59 F.Supp.3d at 994.

Here, the court is unable to find any such “meaningful limitations.” Rovi cites testimony from its expert stating that claim 11 recites the following “unconventional steps,” which purportedly distinguish this case from Alice and Ultramercial:

(1) generating at least one combination category by: identifying the two or more simple categories associated with the at least one program listing, (2) combining at least a subset of the identified simple categories associated with the at least one program listing into the at least one combination category, and (3) wherein the combination category comprises more than one of the identified simple categories.

Dkt. 121 at 24 (citing Dkt. 121-4, ¶ 83).

The court fails to see how these so-called “unconventional” steps – whether considered individually or as part of an ordered combination – are anything more than restating the abstract idea with the instruction to “apply it.” Rovi fails to show how its claimed method would be different from a “conventional” method of using combination categories, and instead proceeds on the assumption that offering expert testimony invoking the word “unconventional” is enough. Essentially, Rovi seeks to patent the idea of using combination categories, limited only by the use of a “processor” and a “receiver,” both of which are generic computer components of the type rejected in Alice.

In its opposition, Rovi takes issue with Netflix’s identification of claim 11 as representative, and argues that other dependent claims contain inventive concepts:

For example, claim 12 requires “supported categories,” claim 13 requires “a

plurality of simple categories that are of high interest to the user,” claim 14 requires a “first simple category that received more user selections than a second simple category,” claim 16 requires “associated metadata,” claim 17 requires a combination category assigned to a “program listing,” [and] claims 18, 19, and 20 require specific hardware integral to the claimed method, like presenting the categories “on the display.”

Dkt. 121 at 24.

While these dependent claims may indeed contain additional elements, Rovi has not shown how any of those elements provide meaningful limitations on the abstract idea of using combination categories. At best, claims 18, 19, and 20 require a type of machine, but a “display” is even more generic than the “general purpose computer” rejected in Alice.

The ’929 patent may well disclose an idea that was unconventional at the time of the patent’s filing. However, an unconventional abstract idea is still an unpatentable abstract idea. Rovi must do more than merely show an unconventional idea, it must show an unconventional embodiment of that idea. Otherwise, the patent would preempt all embodiments of the abstract idea – precisely the result that the Alice/Mayo test was designed to safeguard against. In other words, whereas the DDR court found that “the claims at issue do not attempt to preempt every application of the idea” at issue, this court finds that the ’929 patent would indeed preempt every application of the idea of using combination categories to categorize programs. As a result, the court finds that the ’929 patent fails to disclose an inventive concept, and is thus invalid under § 101.

b. ’962 patent

The ’962 patent covers the use of “selectable categories” to allow users to filter their search results when searching for television shows. In other words, rather than just searching for shows by title, users may also use categories to refine their search results. Both parties primarily cite claim 1 as a representative example:<sup>1</sup>

<sup>1</sup> In a footnote, Rovi takes issue with the identification of claim 1 as representative, arguing that “each asserted claim requires distinctive features of the claimed search engine application. Dkt. 121 at 19, n. 15. For example, Rovi cites the “on-demand programming” requirement of claims 3 and 16; the “titles of shows” requirement of claims

1 A method for searching for shows comprising:

2 providing a search engine application;

3 receiving one or more characters in said search engine application,  
4 wherein said one or more characters are entered in an alpha-  
5 numeric input area;

6 matching said characters using said search engine application to one  
7 or more database entries;

8 providing results corresponding to said database entries in a results  
9 listing, wherein said results comprise one or more show listings and  
10 one or more selectable categories of shows;

11 receiving a user selection from said results listing of one of said  
12 selectable categories;

13 providing at least one additional show listing corresponding to said  
14 selected selectable category in response to the user selection of said  
15 selected selectable category; and

16 enabling a user to perform an action by selecting one of said at least  
17 one additional show listings.

18 Netflix argues that the '962 patent is directed to an abstract idea, and again, Rovi  
19 does not meaningfully challenge this argument. In fact, Rovi admits that “the claimed  
20 steps are directed to the critical feature of enabling users to refine their searches based  
21 on selectable categories.” Dkt. 121 at 19. While Rovi argues that this “critical feature . . .  
22 differ[s] in a fundamental respect from the abstract methods of using a computer merely  
23 to calculate a pre-computer age mathematical problem,” and instead “recites a  
24 technological solution to a problem of refining user searches that arose in the realm of

25 5 and 18; the requirement of selection of characters from entries in an alphanumeric input  
26 area of claims 6 and 19; the “keyword search field” requirement of claims 9 and 23; the  
27 structural requirements of claim 14, including an “input device,” an “output device,” a  
28 “display of results listings,” and a “display of additional show listing;” and claim 27’s  
requirement of a “computer readable medium . . . having computer readable program  
code” of claim 27. These claims are substantially similar to claim 1, with the additional  
elements of note being the structures disclosed in claims 14 and 27. However, the  
disclosed “input device,” “output device,” “display[s],” and “computer readable medium”  
are no more particular than the “general purpose computer” that was rejected in Alice.

1 interactive program guides,” those arguments, at best, establish the novelty of the  
2 abstract idea. Overall, the court finds that the ’962 patent is indeed directed to the  
3 abstract idea of filtering search results using selectable categories.

4 Thus, the court moves to the second Alice/Mayo step, and asks whether the ’962  
5 patent discloses an inventive concept. Rovi first argues that its own proposed  
6 construction ties the “search engine application” to “hardware, software, and/or firmware  
7 which receives search requests and interfaces with one or more databases to respond to  
8 search requests.”

9 It appears that Rovi is trying to establish patentability according to the pre-Alice  
10 (and pre-Bilski) “machine or transformation test,” whereby claims were held to be patent-  
11 eligible if they were tied to a particular machine or apparatus (or if they transformed a  
12 particular article into something different). However, as discussed above, the Supreme  
13 Court’s Bilski decision held that the “machine or transformation” test was not the definitive  
14 test for patentability. 561 U.S. at 603. Thus, even if the ’962 patent were tied to a  
15 particular machine, that still would not render the claims patentable. Moreover, the court  
16 has not adopted Rovi’s proposed construction, so there is no “machine” disclosed in  
17 claim 1, and the only “machines” disclosed in the other claims ( the “input device,” “output  
18 device,” and “display[s]” of claim 14, and the “computer readable medium” of claim 27)  
19 are no more particular than the “general purpose computer” that was rejected in Alice.<sup>2</sup>

20 Rovi then tries another argument, arguing that the computer-implemented steps  
21 do not operate in a normal, expected manner in the following ways: (1) providing search  
22 results that comprise show listings and selectable categories, (2) providing at least one  
23 additional show corresponding to each selectable category, (3) enabling a user to select  
24 shows, (4) enabling a user to watch selected shows, and (5) enabling a user to obtain  
25 additional information about the shows. See Dkt. 121 at 21. This recitation of steps  
26

27 <sup>2</sup> Further, even if the court had adopted Rovi’s proposed construction, “hardware,  
28 software, and/or firmware” is even broader than the “general purpose computer” rejected  
in Alice.

1 strikes the court as similar to that in Ultramercial, where the patentee pointed to its  
2 eleven-step process as proof that the claims disclosed “a specific method of advertising  
3 and content distribution that was previously unknown and never employed on the Internet  
4 before.” 772 F.3d at 714. The Ultramercial court rejected that argument, first finding that  
5 “each of those eleven steps merely instructs the practitioner to implement the abstract  
6 idea with routine, conventional activities,” and then concluding that although “some of the  
7 eleven steps were not previously employed in this art,” that was “not enough – standing  
8 alone – to confer patent eligibility upon the claims at issue.” Id. at 716.

9 The court finds that the rationale of Ultramercial applies here with equal force.  
10 Rovi’s five-step process represents no more than an instruction to “implement the  
11 abstract idea” of using selectable categories to filter search results with “routine,  
12 conventional activity.” While the steps add a level of detail, they constitute no more than  
13 simply re-stating the abstract idea with the instruction to “apply it.” Whether considered  
14 as individual steps or as an ordered combination, the court finds no inventive concept  
15 that would prevent Rovi’s patent from preempting the entire abstract idea of using  
16 selectable categories to filter search results.

17 Finally, Rovi argues that the claims “transform characters into selectable  
18 categories.” Specifically, Rovi argues that the claims disclose the transformation of  
19 alpha-numeric categories into “results comprising one or more show listings and one or  
20 more selectable categories of shows.” This argument appears to imply that any patent  
21 which involves using text to represent any sort of selectable object (a video file, an audio  
22 file, a web hyperlink, etc.) involves a “transformation” that brings the patents within §  
23 101’s boundaries.

24 Whereas Rovi had previously argued under the “machine” prong of the “machine  
25 or transformation” test, it now argues under the “transformation” prong. For support, Rovi  
26 relies on a district court case where the invention disclosed the use of a “tag” that was  
27 appended to credit card data as part of a verification process. Card Verification  
28 Solutions, LLC v. Citigroup, Inc., 2014 WL 4922524 (N.D. Ill. Sept. 29, 2014). Even

1 putting aside the fact that Card Verification is a district court case, and not binding on this  
2 court, there are at least two points of distinction that undercut the opinion's persuasive  
3 value.

4 First, Card Verification was decided on a motion to dismiss, and the court simply  
5 left open the question of whether the claims were patentable under § 101. Second, the  
6 Card Verification court acknowledged that "typically, transforming data from one form to  
7 another does not qualify as the kind of transformation regarded as an important indicator  
8 of patent eligibility," but found that the invention went beyond "manipulating, reorganizing,  
9 or collecting data by actually adding a new subset of numbers or characters to the data,  
10 thereby fundamentally altering the original confidential information." 2014 WL 4922524,  
11 at \*5.

12 In contrast, this case involves the mere "reorganization" of data using categories,  
13 there is no "fundamental alteration" to the information itself. Moreover, the Card  
14 Verification invention did not cover all credit card verification systems, and instead was  
15 limited to applications that involved appending a "tag." This finding echoes Caltech,  
16 where the court specifically found that the claimed method "does not capture many  
17 forms" of implementing the abstract idea of error correction, and thus, the claims did "not  
18 preempt the field of error correction but capture[d] only one effective form of error  
19 correction." 59 F.Supp.3d at 996. In contrast, the '962 patent contains no such limiting  
20 principle, and the claims seek to capture all uses of selectable categories to filter search  
21 results.

22 Accordingly, the court finds that the '962 patent fails to disclose an inventive  
23 concept, and thus is invalid under § 101.

24 2. Viewing History patents ('762 patent and '709 patent)

25 a. '762 patent

26 The '762 patent claims a system and method for visually distinguishing watched  
27 programs from unwatched programs and making viewing recommendations based on a  
28

1 user's viewing history. The parties use claim 1 and claim 13 as illustrative examples:<sup>3</sup>

2 1. A method for use in a client-server interactive television program guide  
3 system for tracking a user's viewing history, comprising:

4 tracking a user's viewing history;

5 storing the user's viewing history on a program guide server;

6 finding programs with the program guide server that are consistent  
7 with the user's viewing history;

8 determining, with the program guide server, whether the programs  
9 found by the program guide server were not previously viewed on  
user television equipment; and

10 displaying, with a program guide client implemented on the user  
11 television equipment, a display of program titles, wherein the display:

12 includes the programs found by the program guide server, wherein  
13 some of the programs have been previously viewed on the user  
television equipment and some of the programs have not been  
14 previously viewed on the user television equipment; and

15 visually distinguishes the programs determined by the program guide  
16 server to have been previously viewed from the programs that have  
not been previously viewed.

17 13. A client-server interactive television program guide system for tracking  
18 a user's viewing history, comprising:

19 user television equipment on which an interactive television program  
20 guide client is implemented, wherein the interactive television  
program guide client is programmed to provide an individual user's  
21 viewing history information to a program guide server over a  
communications path, wherein:

22 the program guide server is programmed to find programs based on  
23 the individual user's viewing history information, determine whether

24 <sup>3</sup> In a footnote, Rovi argues that claim 1 is not representative of the '762 patent, and  
25 argues that the other claims "recite distinctive applications of the claimed client-server  
26 architecture." Dkt. 121 at 12, n. 13. Rovi points to the step of "collecting program ratings  
27 information" of claims 6 and 17; the "user preference information" of claim 15; and the  
28 "additional physical structure" of claim 13, which includes "user television equipment" and  
a "communications path." These claims are substantially similar to claim 1, and to the  
extent that claim 13 includes additional physical structures, a "communications path" is  
no more particular than the "general purpose computer" that was rejected in Alice, and  
"user television equipment" is fully addressed above.



1 the programs found by the program guide server have been  
2 previously viewed on user television equipment, and to indicate the  
3 programs to the interactive television program guide client over the  
4 communications path; and

5 the interactive television program guide client is further programmed  
6 to display, on the user television equipment, a display of program  
7 titles, wherein the display:

8 includes the programs found by the program guide server, wherein  
9 some of the programs have been previously viewed on the user  
10 television equipment and some of the programs have not been  
11 previously viewed on the user television equipment; and

12 visually distinguishes the programs determined by the program guide  
13 server to have been previously viewed from the programs that have  
14 not been previously viewed.

15 Netflix argues that this patent is directed to an abstract idea, while Rovi argues  
16 that the patent is limited to a “unique program guide-program server architecture integral  
17 to the claimed invention.” Rovi also emphasizes the fact that the ITC found that the ’762  
18 patent (and the ’709 patent, which shares the same specification) does not embody an  
19 abstract idea. However, the ITC decision was issued before Alice, and even putting that  
20 aside, the decision contains no analysis that the court finds persuasive, and instead just  
21 contains a rote recitation that the patents cover more than just abstract ideas. Also, even  
22 if the claims were limited to a specific architecture, such a limitation would factor into the  
23 second step of Alice, not the first step. Overall, the court does find that the ’762 patent is  
24 directed to the abstract idea of using a user’s viewing history to visually distinguish  
25 watched programs from unwatched programs and to make recommendations.

26 On the second step of Alice, Rovi again argues that the claims are tied to a  
27 particular machine. Interestingly, while the claims do appear to be limited to “user  
28 television equipment,” Rovi does not emphasize that limitation. Instead, in its opposition,  
Rovi offers the conclusory assertion that the program guide server/client are “unique and  
particular,” without explaining how a “program guide server/client” system is any different  
from a generic server/client system that happens to be used for displaying program  
guides. A generic system component does not become any less generic through the



1 addition of a functional description. As an example, if the claims in Alice had referred to a  
2 “settlement risk-mitigating computer,” rather than just a generic computer, it would not  
3 make the computer any more “unique” or “particular.”

4 However, while the terms “program guide server” and “program guide client” do  
5 not limit the claims to anything more particular than a general purpose computer, the term  
6 “user television equipment” presents a distinct question. Interestingly, Rovi’s brief does  
7 not discuss the “user television equipment” limitation in any detail, and simply cites to the  
8 ITC’s conclusion that “[u]ser television equipment implementing a program guide client is  
9 a ‘particular machine’ integral to the client-server system of the ’762 patent.” Dkt. 121 at  
10 13 (citing ITC record at ID 129). Because the ITC decision does not present the  
11 reasoning behind its conclusion, the court does not consider it particularly persuasive,  
12 and rather than relying on the ITC’s conclusion, the court will address the issue anew.

13 Essentially, the question before the court is whether “user television equipment” is  
14 closer to the “general purpose computer” of Alice (which was held not to be sufficiently  
15 “particular” for § 101 purposes) or closer to the GPS receiver of SiRF Tech., Inc. v. Int’l  
16 Trade Commission (which was held to be sufficiently “particular” for § 101 purposes).  
17 See Alice, 134 S.Ct. at 2358; SiRF, 601 F.3d 1319, 1332-33 (Fed. Cir. 2010). Although  
18 SiRF was decided before both Alice and Mayo, and thus does not address the two-part  
19 test, the court still finds SiRF somewhat relevant in light of the Supreme Court’s holding  
20 that the “machine or transformation” test can be a “useful and important clue” regarding  
21 patentability.

22 As mentioned above, Rovi’s brief does not present any argument equating “user  
23 television equipment” to SiRF’s GPS receiver. As a result, at the hearing, the court  
24 asked both parties for further argument on the issue. Rovi offered only the conclusory  
25 assertion that the claims are “very much like the GPS receiver in SiRF” because “the  
26 systems wouldn’t function without the GPS receiver in SiRF” and, similarly, the system  
27 here “wouldn’t function without the server and client [and] the user television equipment  
28 that exists in the ’762 patent.” Dkt. 151 at 93. However, it cannot be enough to simply

1 show that the system “would not function” without the particular machine. If it were, then  
2 the Alice Court would have upheld the patents in that case, because the claimed method  
3 would not have functioned without the cited general purpose computer. SiRF, to the  
4 extent it remains good law in light of Alice, requires more than just a showing that the  
5 claimed method “would not function” without a recited machine.

6 In SiRF, the court held that “[i]n order for the addition of a machine to impose a  
7 meaningful limit on the scope of a claim, it must play a significant part in permitting the  
8 claimed method to be performed, rather than function solely as an obvious mechanism  
9 for permitting a solution to be achieved more quickly.” 601 F.3d at 1333. The court also  
10 emphasized that “there is no evidence here that the calculations here can be performed  
11 entirely in the human mind,” and thus, “the use of a GPS receiver is essential to the  
12 operation of the claimed methods.” Id.

13 In the present case, the human mind is certainly capable of distinguishing between  
14 watched and unwatched programs, and making recommendations based on a user’s  
15 viewing history. The use of television equipment simply enables those steps to be  
16 visually represented, and at best, is “an obvious mechanism for permitting a solution to  
17 be achieved more quickly.” In fact, if the user has watched only a few programs, the use  
18 of television equipment rather than the human mind may be no quicker at all. Overall, the  
19 court finds that “user television equipment” is not analogous to the GPS receiver of SiRF,  
20 and thus, is not sufficiently limiting for purposes of section 101.

21 Beyond the “particular machine” argument, Rovi separately argues that the claims  
22 “do not operate in a normal, expected manner,” as they include the non-generic steps of:  
23 (1) determining on the server whether the programs have been previously viewed, (2)  
24 sending a signal to the client indicating the previously-viewed programs, and (3) visually  
25 distinguishing the previously-watched programs. See Dkt. 121 at 13-14 (citing Dkt. 121-  
26 1, ¶ 103). The court fails to see how these steps – whether considered individually or as  
27 an ordered combination – are anything other than the type of routine, conventional, well-  
28 understood steps that were rejected in Alice, Mayo, and Ultramercial. Thus, the court

finds that the '762 patent fails to disclose an inventive concept that adds something to the claims other than the abstract idea itself, and thus, is invalid under § 101.

b. '709 patent

The '709 patent, which shares a common specification with the '762 patent, claims a system and method for providing personal recommendations based on a user's viewing history. The parties use claims 13 and 14 as illustrative examples:

13. A method for use in an interactive program guide system for providing a customized viewing experience to a user, comprising:

generating a viewing history database comprising program listings and associated program criteria;

determining at least one of the associated program criteria from the viewing history database that meets a user preference profile;

determining from a program listing database a set of programs not yet watched;

applying the at least one of the associated program criteria to the set of programs not yet watched to generate at least one personal viewing recommendation; and

providing the personal viewing recommendation to a user.

14. The method defined in claim 13 wherein generating a viewing history database comprises storing the program listings and the associated program criteria for at least one of:

programs that the user has watched;

programs for which the user has scheduled reminders;

programs for which the user has scheduled for recording;

programs for which the user has searched; and

programs for which the user has ordered.

Netflix argues that the claims are directed to an abstract idea, and Rovi argues that the concept was novel at the time, as the patent "recited a technological solution to a specific problem arising in interactive television guides of generating personal viewing recommendations based on programs not yet watched regardless of which device the user employs." Again, while Rovi may be correct that the claims are directed to a novel

1 abstract idea, they nonetheless are directed to an abstract idea, namely, the abstract  
2 idea of generating viewing recommendations.

3 Rovi argues that the claims are tied to particular machines, but unlike the '762  
4 patent, there is not even a limitation to "television equipment" here, only a "viewing  
5 history database" and a "program listing database."<sup>4</sup> A "database" is no different from a  
6 generic computer, and as before, the addition of functional descriptors does not turn a  
7 generic database into something more particular. While the ITC concluded that the  
8 "database in the interactive program guide system is a particular type of machine," given  
9 the intervening Alice opinion, the court finds the ITC's conclusion of limited value.  
10 Accordingly, the court finds that the '709 patent claims fail to tie the method to a particular  
11 machine that would sufficiently limit to the scope of the patent to something narrower  
12 than an abstract idea.

13 Rovi then argues that the claimed steps "do not operate in a normal, expected  
14 manner," and cites to expert testimony stating that the step of "determining at least one of  
15 the associated program criteria from the viewing history database that meets a user  
16 preference profile" is not a routine or conventional activity for a computer database. Dkt.  
17 121 at 17 (citing Dkt. 121-1, ¶ 126). Rovi also cites to a district court case from the  
18 District of Delaware, where "tailoring the delivery of information to a specific user" was  
19 found patentable under Alice. Intellectual Ventures v. Traders Trust, 2014 WL 7215193  
20 (D. Del. 2014).

21 In Intellectual Ventures, the patents were based on the idea of "providing a  
22 customized web page with content based on the user's profile and website navigation  
23

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24 <sup>4</sup> Rovi also cites, in a footnote, other claims that purportedly recite "distinctive applications  
25 of the program guide-program server architecture to generate personal viewing  
26 recommendations." See Dkt. 121 at 16, n. 14. These purported "distinctive applications"  
27 are substantially similar to the methods of claims 13 and 14, with the additional elements  
28 of note being the "additional physical structure" in claim 17. However, the disclosed "user  
equipment on which an interactive program guide client is implemented," "program guide  
server," "first database," "second database," "processing circuitry," and "communications  
path" are no more particular than the "general purpose computer" that was rejected in  
Alice.

history.” 2014 WL 7215193 at \*9. The court followed the Federal Circuit’s decision in DDR (mentioned above) and found the invention patentable, but specifically pointed out that the claims “do not preempt all applications of providing customized web pages, as they recite a specific method of customizing web pages based on user data.” Id.

In contrast to Intellectual Ventures, the ’709 patent in this case does not disclose a “specific method” of generating viewing recommendations, as the claims seek to capture virtually all methods of generating recommendations. Neither the claims themselves nor Rovi’s brief contain any meaningful disclosure of how the recommendations are generated – based on what programs viewers with similar preferences have liked, or based on the content providers’ own determination of what programs are similar, etc. In short, unlike Intellectual Ventures, and unlike Caltech, these claims do seek to preempt all applications of the abstract idea. Moreover, the court finds that the claimed steps – whether considered individually or as part of an ordered combination – do not go beyond routine, conventional means of generating viewing recommendations. Thus, the court finds that no inventive concept is disclosed, and that the ’709 patent is invalid under § 101.

### 3. Bookmarking patent (the ’906 patent)

The ’906 patent claims a method of creating a “bookmark” to allow users to start watching a program on one device, then resume the program at the same point on a different type of device. Rovi’s brief primarily cites claims 1 and 6 as illustrative of the claims.<sup>5</sup> Claim 1 reads as follows:

A method for providing configurable access to media in a media-on-demand system comprising the steps of:

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<sup>5</sup> In a footnote, Rovi cites other claims that purportedly “recite[] distinctive applications” of the claimed method. Rovi points to the step of “identifying device properties . . . prior to commencing delivery of the media” in claim 2; the requirement of storing the media and delivering it to one or a plurality of media-on-demand servers in claims 3, 6, and 8; and the step of “interrupting said delivery of said media” in claims 10 and 11. Dkt. 121 at 7, n. 9. The court finds these claims to be substantially similar to claims 1 and 6, and linked to the same abstract idea.

1 delivering the media to a first client device through a first communications  
2 link, wherein the media is configured in a format compatible with identified  
3 device properties of said first client device and said first client device is  
4 associated with a first user;

5 recording a bookmark specifying a position in the media; and

6 delivering the media to a second client device through a second  
7 communications link, said delivery to said second client device beginning at  
8 said position specified by said recorded bookmark, wherein the media is  
9 configured in a format compatible with identified device properties of said  
10 second client device and said second client device also is associated with  
11 said first user.

12 Claim 6 is dependent on claim 3, which is dependent on claim 2, which is in turn  
13 dependent on claim 1. Claims 2, 3, and 6 read as follows:

14 2. The method according to claim 1, further comprising the steps of:

15 identifying device properties for each of said first and second client  
16 devices, device properties of said first client device being identified  
17 prior to commencing delivery of the media to said first client device  
18 and device properties of said second client device being identified  
19 prior to commencing delivery of the media to said second client  
20 device.

21 3. The method according to claim 2, wherein the media is stored in a  
22 media-on-demand server (MODS) and delivered to said first and said  
23 second client devices via said first and said second communications link  
24 respectively.

25 6. The method according claim 3, further comprising:

26 storing the media in selected ones of a plurality of media-on-demand  
27 servers, each MODS in said plurality of media-on-demand servers  
28 storing the media in at least one format compatible with a selected  
device type;

selecting a MODS for delivering the media to said first client device,  
said selected MODS having stored thereon the media in a format  
compatible with said first client device; and

delivering from said selected MODS the media in a format  
compatible with said first client device.

Netflix argues that the '906 patent claims are directed to the abstract idea of  
bookmarking across devices, while Rovi focuses on the fact that the process was novel

at the time of invention. As discussed above, whether the process was novel does not factor in the “abstract” analysis. A novel abstract idea is still an abstract idea.

When discussing the '906 patent at the hearing, the court specifically asked Rovi's counsel: “What makes it not abstract?” Dkt. 151 at 64. Counsel responded by pointing to the “media-on-demand server system” and the “client-server architecture,” but as the Alice Court held, the mere presence of a computer does not preclude a finding that the patent is directed to an abstract idea. Just as the Alice Court found that the claims were directed to “the abstract idea of intermediated settlement,” despite the presence of a computer, the court finds that the '906 patent claims are directed to the abstract idea of bookmarking media files across devices, despite the presence of a server and a client.

Moving to the second step's search for an inventive concept, Rovi's primary arguments are based on the machine or transformation test – arguing both that the claims are limited to particular machines, and that the addition of a bookmark effects a transformation of the media file. First, regarding the “machine” argument, Rovi points to two claim limitations – the use of a “media-on-demand system,” and the use of “client devices.”

As an initial matter, the court finds that a “client device” is no more particular than a generic “general purpose computer,” and thus must be rejected as a “particular machine” for the same reason articulated by the Alice Court. However, the analysis for the “media-on-demand system” (also referred to as a “media-on-demand server” in the parties' papers) presents a distinct question.

The “particular machine” analysis with respect to the “media-on-demand system” is similar to the one above, in the context of the '762 patent's disclosure of “user television equipment.” And as above, the key question for the court is whether the disclosed “media-on-demand system” is more similar to the “generic computer” of Alice or the GPS receiver of SiRF.

Netflix argues that, in practice, a media-on-demand server is no different from a generic server, and thus, should be rejected for the same reason that the Alice Court



1 rejected a general purpose computer as enough to establish patentability. Rovi responds  
2 by arguing that SiRF directly applies, as the '906 patent discloses machines that “play a  
3 significant part in permitting the claimed method to be performed.” 601 F.3d at 1332-33.  
4 Rovi argues that the “media-on-demand system” – made up of a “media-on-demand  
5 server,” a “first client device,” and a “second client device” – “provide[] users with the  
6 ability to receive delivered media (such as a movie) across a network in a client device  
7 through a communications link to a media-on-demand server.” Rovi’s expert opines that  
8 “without the [media-on-demand server], the media could not be configured in a format  
9 compatible with identified device properties of the first and second client devices and  
10 delivered in those different formats to the first and second client devices.” Dkt. 121 at 8.  
11 Rovi further argues that the media-on-demand server is necessary for recording a  
12 specified position in the media, and for pausing and resuming media across different  
13 devices with different formats. Dkt. 121 at 8-9.

14 While SiRF may remain good law even in light of Alice, it seems apparent that a  
15 machine must do more than simply “play a significant part in permitting the claimed  
16 method to be performed” in order to supply the required inventive concept. Given Alice’s  
17 rejection of a “general purpose computer” as sufficient to establish patentability, a  
18 patentee must show that the machine itself is a particular machine, and not just that a  
19 generic machine is being used for a particular purpose. As discussed above, if  
20 identifying a particular function of a machine were enough to establish patentability under  
21 the “machine or transformation” test, then any patentee could evade invalidity by using  
22 specific-sounding language to describe a general purpose computer. For instance, the  
23 Alice patentee could describe the recited general purpose computer as a “settlement risk-  
24 mitigating computer,” without which the claimed method could not be performed. To  
25 allow a patentee’s creative description of his claimed computer to govern patent eligibility  
26 would be to turn the § 101 analysis into a draftman’s art. Such an approach directly  
27 contradicts the purpose underlying § 101.

28 In this case, the court has no basis on which to find that the recited “media-on-



1 demand system” is anything other than a generic server/client system, nor that the  
2 “media-on-demand server” is anything other than a generic server. Simply adding the  
3 term “media-on-demand” does not make a generic computer component any more  
4 particular.

5 Aside from the “machine” argument, Rovi separately argues that the  
6 “bookmarking” step “transforms the media file,” and thus “meaningfully limits the '906  
7 patent claims.” For support, Rovi relies on the above-mentioned Card Verification case,  
8 a post-Alice district court case involving a credit card verification method in which a “tag”  
9 was appended to the credit card information. Card Verification, 2014 WL 4922524.

10 After first finding that the patent was directed to the abstract idea of verifying credit  
11 card information, the Card Verification court then applied the second Alice/Mayo step,  
12 ultimately concluding that the “claims may be sufficiently limited by the transformation  
13 that occurs when the randomly-generated tag is added to the confidential information.”  
14 2014 WL 4922524 at \*5. Although the court noted that “typically, transforming data from  
15 one form to another does not qualify as the kind of transformation regarded as an  
16 important indicator of patent eligibility,” it nonetheless found that “the claimed invention  
17 goes beyond manipulating, reorganizing, or collecting data by actually adding a new  
18 subset of numbers or characters to the data, thereby fundamentally altering the original  
19 confidential information.” Id.

20 While the court finds that Rovi’s “transformation” argument is stronger than its  
21 “machine” argument, there are still several problems with it. First, and most simply, as  
22 mentioned above, the Card Verification court had before it a motion to dismiss rather than  
23 a motion for summary judgment, and was thus “bound to make all reasonable inferences”  
24 in favor of the patentee. 2014 WL 4922524 at \*4. Specifically, the court considered the  
25 question of whether the claimed process might be one that “can be performed by a  
26 human mind with nothing more than pen and paper,” but because such a question was a  
27 “factual question inappropriate at the motion to dismiss stage,” it denied the motion to  
28 dismiss. Because the present case involves a motion for summary judgment with the

benefit of a full record of discovery, this court is in a different position than was the Card Verification court.

Second, also as mentioned above, while the Card Verification court did find sufficient possibility of a “transformation,” it cited a Federal Circuit case for the proposition that “the mere manipulation or reorganization of data . . . does not satisfy the transformation prong.” Card Verification, 2014 WL 4922524 at \*5 (citing CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366, 1375 (Fed. Cir. 2011)). CyberSource involved a computerized process for detecting credit card fraud by creating a “map” of credit card numbers and the IP addresses from which those cards were used to complete transactions. The court agreed that the process “manipulates data to organize it in a logical way such that additional fraud tests may be performed,” but ultimately held that the “mere manipulation or reorganization of data, however, does not satisfy the transformation prong.” 654 F.3d at 1375.

To determine whether to apply CyberSource or Card Verification, the court must decide whether the addition of a bookmark constitutes mere “manipulation” or “reorganization” of data, or whether it “fundamentally alters” the data. Overall, the court finds that the addition of a bookmark falls short of the “fundamental alteration” of data recognized by the Card Verification court. To start, the court fails to see how a bookmark can “fundamentally alter” a file when it is replaced with a new bookmark whenever the user watches a part of the video. Moreover, the only actual change to the data is an update to a video’s starting point to account for any viewing activity from a different device, and such a change is more of a “manipulation” or “reorganization” than a “fundamental alteration.” Thus, the court finds that the claimed process fails to sufficiently “transform” the media file for purposes of the “machine or transformation” test.

Independent of the “machine or transformation” test, Rovi separately argues that the “computer-implemented steps do not operate in a normal, expected manner,” and thus are “not broadly and generically claimed.” Rovi asserts that the claims require the media-on-demand server to perform the following “special functions”:

(1) delivering the media to first and second client devices through respective first and second communications links, (2) configuring the media in a format compatible with identified device properties of said first and second client devices, (3) recording a bookmark specifying a position in the media, and (4) delivering the media in a position specified by said recorded bookmark.

Dkt. 121 at 9 (citing '906 patent, claims 1, 6, 8).

The court fails to see how these functions – whether considered individually or as part of an ordered combination – are anything other than the “routine,” “conventional” activity that was expressly rejected in Alice, Mayo, and Ultramercial. The four steps enumerated by Rovi do nothing to limit the scope of the claims, and instead, cover all applications of bookmarking media files to allow playback on different devices. Unlike DDR, where the court found that the “claims at issue do not attempt to preempt every application” of the abstract idea, and instead “recite a specific way to automate the creation of a composite web page,” the claims here do indeed preempt every application of the abstract idea. The steps recounted above – delivering the media to the devices in a compatible format, and recording a bookmark to allow playback to begin at that bookmark – are described at such a high degree of abstraction that it is impossible to conclude that they “recite a specific way” to record bookmarks for playback across different devices. The claims do little more than describe the abstract idea of bookmarking across devices with an instruction to “apply it.”

Rovi also cites to testimony from its expert, who opines that “the required first and second communications links are not a generic or conventional arrangement,” but are instead “a particular arrangement that enables the media-on-demand server to perform the specialized function of delivering media to different types of devices depending on the media format the device is capable of receiving.” Dkt. 121 at 10 (citing Dkt. 121-1, ¶ 33). However, the court finds these opinions to be wholly conclusory, as Dr. Shamos invokes the words “particular” and “specialized” without explaining how the claimed method differs from a conventional method for recording bookmarks for multiple-device playback. While the very idea of allowing multiple-device playback may have been novel at the time of the

1 invention, the second step of the Alice/Mayo test requires more than a novel idea – it  
2 requires a specific application of that idea, to ensure that all embodiments of the idea  
3 (even if novel) are not preempted.

4 In sum, while Rovi repeatedly asserts that the '906 patent does “not wholly  
5 preempt all practical applications of delivering media to different devices with different  
6 capabilities,” there court finds no basis to support that assertion. As a result, the court  
7 finds that the '906 patent fails to disclose an inventive concept under the second step of  
8 Alice/Mayo's test, and thus, is invalid under § 101.

### 9 CONCLUSION

10 For the foregoing reasons, the court finds that the '929 patent, the '962 patent, the  
11 '762 patent, the '709 patent, and the '906 patent are invalid under section 101.  
12 Accordingly, Netflix's motion for summary judgment is GRANTED.

13 Because the court's judgment of invalidity “necessarily moots the issue of  
14 infringement,” Netflix's declaratory judgment claims for non-infringement and Rovi's  
15 counter-claims for infringement are dismissed as moot. See TypeRight Keyboard Corp.  
16 v. Microsoft Corp., 374 F.3d 1151, 1157 (Fed. Cir. 2004).

### 18 IT IS SO ORDERED.

19 Dated: July 15, 2015



20  
21 PHYLLIS J. HAMILTON  
22 United States District Judge  
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26  
27  
28

(12) **United States Patent**  
**Katz et al.**

(10) **Patent No.:** **US 7,103,906 B1**  
 (45) **Date of Patent:** **Sep. 5, 2006**

(54) **USER CONTROLLED MULTI-DEVICE  
 MEDIA-ON-DEMAND SYSTEM**

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(73) Assignee: **International Business Machines Corporation**, Armonk, NY (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 682 days.

(21) Appl. No.: **09/676,545**

(22) Filed: **Sep. 29, 2000**

(51) **Int. Cl.**  
**H04N 7/173** (2006.01)

(52) **U.S. Cl.** ..... **725/87; 725/88; 725/91; 725/92; 725/93; 725/98**

(58) **Field of Classification Search** ..... **725/86, 725/87, 91, 93, 98, 92, 88, 101-103, 115, 725/116, 135, 146; 386/46, 68, 83**  
 See application file for complete search history.

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\* cited by examiner

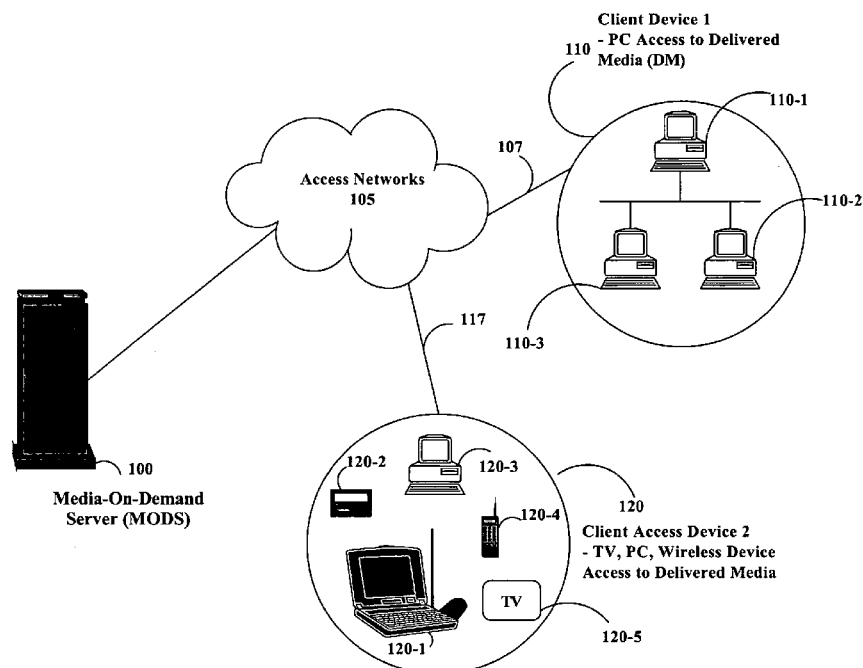
*Primary Examiner*—Kieu-Oanh Bui

(74) *Attorney, Agent, or Firm*—Akerman Senterfitt

(57) **ABSTRACT**

A method for providing configurable access to media in a media-on-demand system also can include delivering the media to a first client device in a format compatible with the first client device; interrupting the delivery of the media; recording a bookmark specifying a position in the media where the interruption occurred; and resuming delivery of the media to a second client device, the resumed delivery beginning at a position in the media specified by the recorded bookmark. The method further can include identifying device properties for each of the first and second client devices; delivering the media to the first client device in a format compatible with the identified device properties for the first client device; and, delivering the media to the second client device in a format compatible with the identified device properties for the second client device.

**11 Claims, 6 Drawing Sheets**



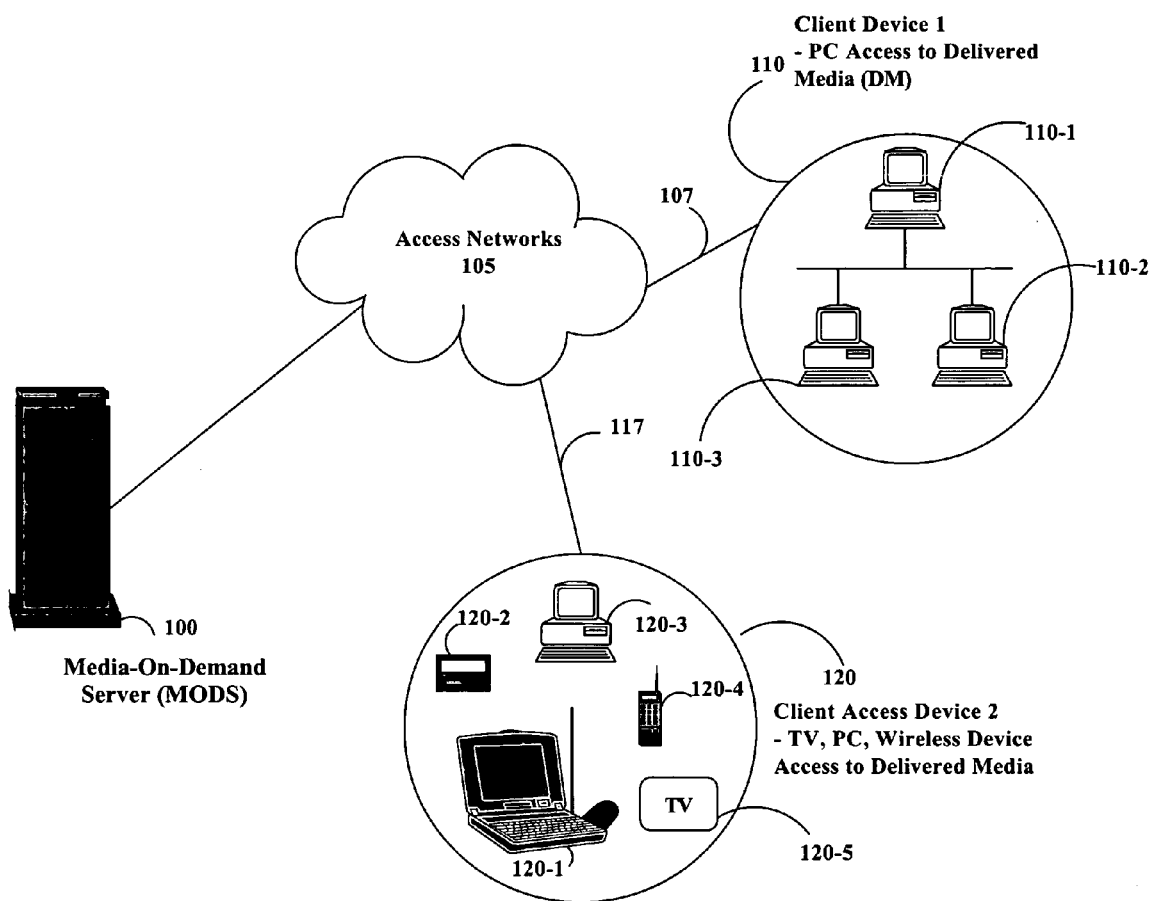


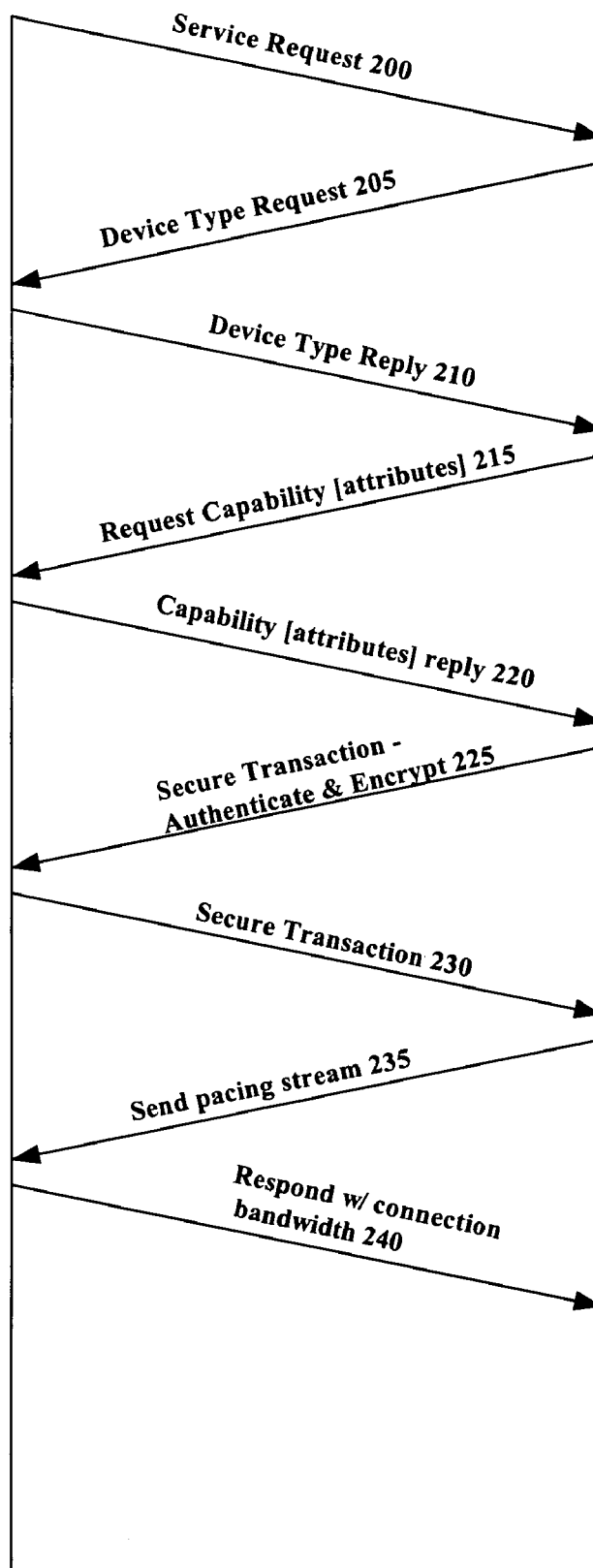
FIG. 1

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**FIG. 2**

Appx059

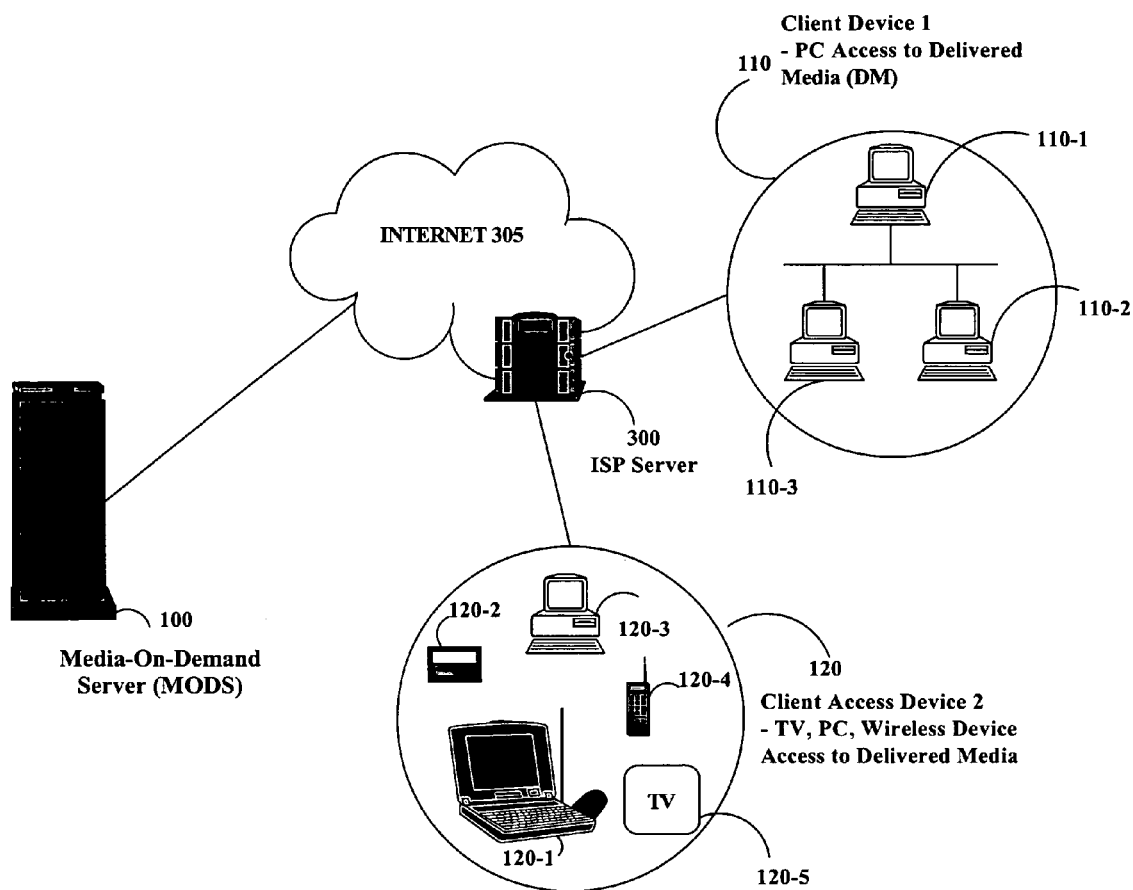



FIG. 3



User Identification	400		<b>Information on last viewing</b>
Delivered Media Identification	405		
Billing Information	410		
MODS Identification	415		
DM Identification/this MODS	420		
Time code of last viewed second	425		
Time code of beginning of last scene in progress	430		
Last Format Used	435		
Transaction Identification	440		
Duration	445		

**FIG. 4.**

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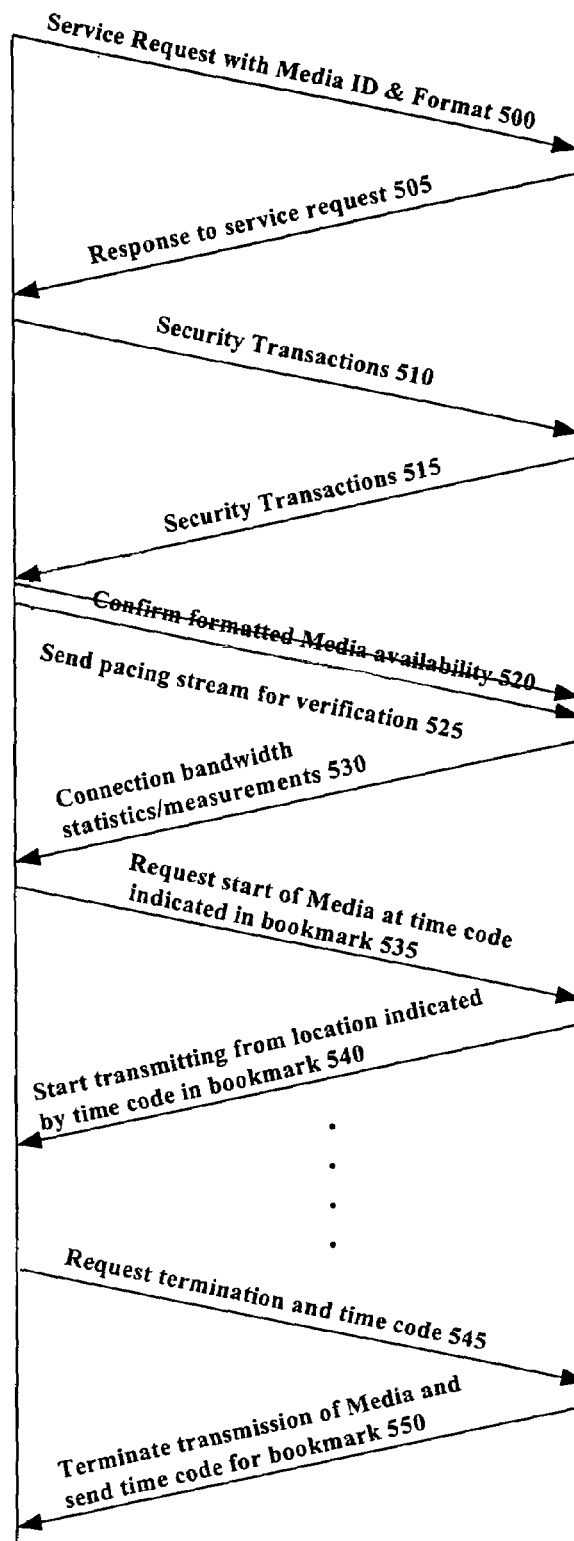


FIG. 5

Appx062

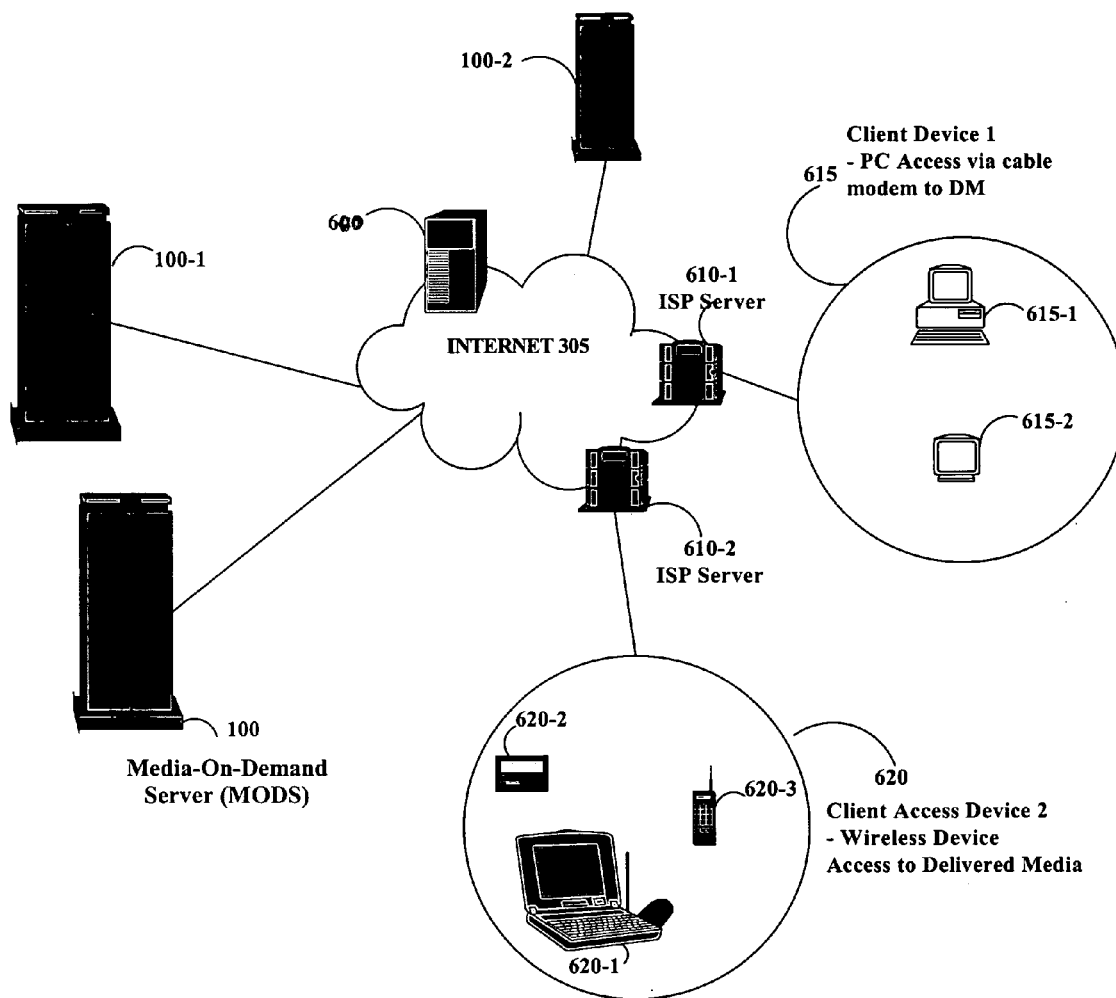


FIG. 6

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**USER CONTROLLED MULTI-DEVICE  
MEDIA-ON-DEMAND SYSTEM****CROSS REFERENCE TO RELATED  
APPLICATIONS**

(Not Applicable)

**STATEMENT REGARDING FEDERALLY  
SPONSORED RESEARCH OR DEVELOPMENT**

(Not Applicable)

**BACKGROUND OF THE INVENTION****1. Technical Field**

The present invention relates to the field of multimedia transfer and control. More particularly, the instant invention relates to a method and apparatus for dynamically controlling and referencing digital media independent of the point of access.

**2. Description of the Related Art**

Users, both business and consumers, are increasingly becoming accustomed to having large amounts of digital data delivered from various media-on-demand (MOD) systems. The continuing evolution from narrowband to broadband networks has fueled a growing need for digital data delivery by facilitating the transmission of broadband data not only by wired means, but also by wireless means. For example, the Internet, with its myriad of text, audio and video content, and its omnipresent availability, can provide consumers with a wealth of information that is practically accessible from anywhere through numerous wired and wireless means. As networks which provide access to digital data continue to evolve, the networks improve their ability to more efficiently distribute and serve bandwidth demanding streaming audio and video content to consumers.

Various forms of wired access methodologies have been created to provide consumer access to the various broadband networks. For example, cable modem service provided by cable service operators can provide Local Area Network (LAN) type access speeds via the same coaxial cable that carries cable signals to the premises of a subscriber. The cable modems used in these systems can support transmission speeds on the order of several megabits per second depending upon whether the network is engineered to use a symmetrical or an asymmetrical topology. These systems are orders of magnitude faster than narrowband systems, which typically can provide transmission speeds ranging from 28 Kbps to 56 Kbps. Digital Subscriber Loop (DSL) technology also can provide broadband access to subscribers, albeit, through traditional Plain Old Telephone Service (POTS) copper twisted pair lines. DSL modems, although not as fast as cable modems today, are touted to provide downstream speeds approaching 2 Mbps and upstream speeds approaching 512 Kbps depending upon the underlying network implementation.

Several wireless access technologies have been used to provide broadband wireless access to consumers. For example, the Reunion Broadband Wireless Access (BWA) manufactured by Nortel Networks Corporation of Brampton, P.O. provides a digital point-to-multipoint technology operating at frequencies ranging from 24 GHz to 38 GHz. Additionally, Bluetooth™, a wireless technology for providing a short range radio link between various small form factor data devices, can operate at 2.45 GHz with transmission speeds of 721 Kbps. Finally, various other technologies,

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such as Fixed Wireless Loop, Wireless Local Loop, Local Multipoint Distribution System (LMDS) and Multichannel Multipoint Distribution System (MMDS) have been used to provide broadband access to subscribers.

The growth and gradual switch from narrowband to broadband access and services has eased user access to digital media by decreasing download time, consequently increasing user willingness to access digital media networks. This growth in network access and subscriber willingness has fueled the need to provide subscriber terminals to access the various broadband services. Typical subscriber access devices include, PCs, TVs, set-top boxes, handheld computers, wireless LAN devices, and audio devices that have the capability to download digital media content from the Internet for later playback and viewing.

Consequently, a new problem of user/subscriber control over the transmission of digital media has arisen from the development of MOD services, broadband access and the existence of a myriad of access devices, each having its own capabilities and access characteristics. Current systems lack functionality for accessing specific digital media on a first access device in a viewing session, and subsequently continuing the viewing session by allowing access of the same digital media from a second access device. For example, with present systems, a user viewing a movie delivered through a TV at home, cannot terminate the delivery of the movie only to resume the delivery of the same movie at a later time. Additionally, current systems do not permit one to resume delivery of a movie at a later time through a different access device, for example a PC. Finally, current systems do not permit the resumption of the delivery of the movie to an access device positioned in a location that differs from that in which the original access began, namely, the home. Accordingly, given the limitations and inflexibility present in current MOD systems, there exists a need to provide a more efficient and flexible system and method for providing configurable access to digital media in a MOD system.

**SUMMARY OF THE INVENTION**

The present invention can include a method for providing configurable access to media in a media-on-demand system. The method can include the steps of delivering the media to a first client device through a first communications link; recording a bookmark specifying a position in the media; and delivering the media to a second client device through a second communications link. Significantly, the delivery to the second client device can begin at the position specified by the recorded bookmark. The method can further include the steps of identifying device properties for each of the first and second client devices; and, delivering the media to the first and second client devices through the respectively established first and second communications links. Notably, the client device properties can include the client device type, particular media formats which can be processed by the client device and the type of communications link which can be supported by the client device.

In one aspect of the present invention, the media can be delivered to first and second client device sessions through first and second communications links respectively. Generally, in this aspect of the present invention, the first and second client device sessions can reside in a single client device. However, the invention is not limited in this regard and the first and second client device sessions can reside in first and second client devices.

Notably, the media can be delivered in a format compatible with the identified device properties. Specifically, in one

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aspect of the invention, the media is stored in a media-on-demand server (MODS) and delivered to the first and the second client devices via the first and the second communications link respectively. In another aspect of the invention, the step of delivering the media to the first client device via the first communications link, can include receiving the media from the MODS in an intermediate server. In the intermediate server, the media can be converted to a format compatible with the identified device properties of the first client device; and the converted media can be delivered to the first client device via the first communications link.

In another aspect of the invention, the step of delivering the media to a second client device via the second communications link can include receiving the media in an intermediate server from the MODS. In the intermediate server, the media can be converted to a format compatible with the identified device properties of the second client device. Subsequently, the converted media can be delivered to the second client device via the second communications link.

In one aspect of the present invention, the method also can include the steps of storing the media in selected ones of a plurality of media-on-demand servers. Each MODS in the plurality of media-on-demand servers can store the media in at least one format compatible with a selected device type. A MODS can be selected for delivering the media to the first client device. The selected MODS can have stored thereon the media in a format compatible with the first client device. Subsequently, the media can be delivered from the selected MODS in a format compatible with the first client device. Likewise, a MODS can be selected for delivering the media to the second client device, wherein the selected MODS has stored thereon the media in a format compatible with the second client device. Subsequently, the media can be delivered from the selected MODS in a format compatible with the second client device.

The selecting step can further include determining if a MODS is available for delivering the media to the first client device in a format compatible with the first client device. If it is determined that a MODS is not available for delivering the media to the first client device in a format compatible with the first client device, a MODS can be selected for delivering the media to the first client device. Notably, the selected MODS can contain the media in a standard format. As such, the media in the standard format can be converted to a format compatible with the first client device.

Similarly, the selecting step can further include determining if a MODS is available for delivering the media to the second client device in a format compatible with the second client device. If it is determined that a MODS is not available for delivering the media to the second client device in a format compatible with the second client device, a MODS can be selected for delivering the media to the second client device. Notably, the selected MODS can contain the media in a standard format. As such, the media in the standard format can be converted to a format compatible with the second client device.

A method for providing configurable access to media in a media-on-demand system also can include delivering the media to a first client device in a format compatible with the first client device; interrupting the delivery of the media; recording a bookmark specifying a position in the media where the interruption occurred; and resuming delivery of the media to a second client device, the resumed delivery beginning at a position in the media specified by the recorded bookmark. The method further can include identifying device properties for each of the first and second client devices; delivering the media to the first client device

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in a format compatible with the identified device properties for the first client device; and, delivering the media to the second client device in a format compatible with the identified device properties for the second client device.

The present invention also can include a user-controlled media-on-demand system. The system can include a media-on-demand server (MODS) for delivering media to client device sessions; a first communications link between the MODS and a first client device session; a second communications link between the MODS and a second client device session; and, a bookmark in the MODS specifying a position in the delivered media. Notably, the MODS can deliver media to the first client device session over the first communications link. Similarly, the MODS can deliver the media to the second client device session over the second communications link beginning at the position specified by the bookmark. Notably, the first and second client device sessions can reside in first and second client device sessions. Alternatively, the first and second client device sessions can reside in a single client device.

In one aspect of the invention, the system can also include an intermediate server disposed between the MODS and the client devices. In particular, the intermediate server can receive the delivered media from the MODS. Also, the intermediate server can identify device properties for each of the client devices. In consequence, the intermediate server can convert the delivered media to a media format compatible with the identified device properties for each client device. Finally, the intermediate server can deliver the converted media to the client devices.

In another aspect of the invention, the system can include a plurality of media-on-demand servers. Each MODS in the plurality of media-on-demand servers can store media in at least one format compatible with a specific device type. Also, the system can include an intermediate server which can identify a device type of a client device. In consequence, the intermediate server can select a MODS in the plurality of media-on-demand servers for delivering the media to the client device. The selected MODS can store the media in a format compatible with the identified device type. Upon being selected, the MODS can deliver the media to the client device in the format compatible with the identified device type.

In yet another aspect of the present invention, the system can further include a backup MODS for storing media in a standard format compatible with a standard device type; and, a conversion filter in the intermediate server. The intermediate server can determine if a MODS in the plurality of media-on-demand servers is available for delivering the media to the client device in a format compatible with the client device. The intermediate server also can select the backup MODS if it is determined that no MODS is available for delivering media to the client device in a format compatible with the client device. The backup MODS can deliver the media to the intermediate server in the format compatible with the identified device type. As a result, the intermediate server can convert the media to a format compatible with the identified device type in the conversion filter.

#### BRIEF DESCRIPTION OF THE DRAWINGS

There are presently shown in the drawings embodiments which are presently preferred, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown, wherein:

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FIG. 1 is an exemplary network architecture diagram illustrating various network entities of the invention;

FIG. 2 is an exemplary flow diagram illustrating the messaging that occurs between a client device and a MODS in the startup process;

FIG. 3 illustrates an alternate network architecture for the network illustrated in FIG. 1, wherein the MODS is mediated by an ISP;

FIG. 4 illustrates the fields in an exemplary bookmark;

FIG. 5 is an exemplary flow diagram illustrating the messaging that occurs between a MODS and ISP;

FIG. 6 illustrates is an exemplary network having a plurality of MODS and a plurality of service providers each servicing a different client device type is disclosed;

#### DETAILED DESCRIPTION OF THE INVENTION

The present invention is a user-controlled, multi-device, media-on-demand system. The media-demand-system of the present system can provide users with the ability to receive delivered media across a network in a client device through a communications link to a media-on-demand server (MODS) regardless of the properties of the client device and the characteristics of the communications link. Specifically, the MODS can deliver particular media to the client device in a format consonant with the properties of the client device which can include device type, acceptable media format and communications link speed and reliability.

Significantly, the user can interrupt the delivery of the delivered media to a client device session in a client device, and subsequently the user can resume the delivery of the delivered media in a seamless manner. Notably, the delivery can resume in a new client device session in a different client device, or in a new client device session in the same client device as the initial client device session. Additionally, the delivery can resume regardless of the timing of the resumption of the delivery and of the properties of the client device through which the user receives the resumed delivery.

Specifically, the user can resume the delivery of a previously interrupted reception of delivered media through a particular client device and a corresponding communications link each of which may have properties which differ from the client device and corresponding communications link of the interrupted delivery. Upon resumption of the delivery, the properties of the new client device can be determined and the format of the delivered media dynamically changed to accommodate the new client device. Moreover, the delivery can resume at a position in the delivered media corresponding to the position in the delivered media which had been most recently delivered to the client device prior to the interruption.

FIG. 1 is an exemplary network architecture diagram illustrating the various network entities of the invention in accordance with the inventive arrangements. As illustrated in the figure, the major network entities can include a MODS 100, Access Networks 105 and a first client access device 110 exemplarily illustrated as PC Access to Delivered Media consisting of computers 110-1, 110-2 and 110-3. A second client access device 120 is exemplarily illustrated as a TV, PC, Wireless Device Access to Delivered Media consisting of a laptop computer 120-1, a handheld device 120-2, a desktop computer 120-3 and a wireless telephone 120-4.

Client access devices (client devices) 110 and 120 are connected to access networks 105 via connections 107 and 117. Connections 107 and 117 may be wired or wireless connections. Typical wired connections include but are not

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limited to narrowband POTS, xDSL, Hybrid Fiber Coaxial (HFC) and cable, which can utilize twisted pair copper wires, coaxial cable, fiber or any combination thereof. Typical wireless connections include but are not limited to Cellular, PCS, CDPD, GPRS and Bluetooth each which typically operate at frequencies in the range of 900 MHz to 38 GHz.

The MODS 100 can be comprised of a plurality of access interfaces since it supports access by different kinds of client devices. For example, the MODS 100 can have a Ethernet interface that supports a TCP/IP stack, an X.25 interface to support communication with public data networks that utilize the X.25 protocol, or a T1 interface to support traffic from a public switched telephone network (PSTN).

In addition to supporting various access methodologies, the MODS 100 can store delivered media in a variety of formats, wherein each format is compatible with a particular type of client access device. For example, the MODS 100 may store particular delivered media in MPEG1, MPEG2, Digital Video Broadcast, Quicktime, etc. As a result, the ability to store delivered media in different formats provides the flexibility to serve delivered media to differing types of client devices.

Alternatively, the MODS 100 merely can store a single default format of the delivered media. However, when a request for delivered media is received from a client device having a particular device type, the MODS 100 can identify the device type and transcode or convert the delivered media from the default format to a format compatible with the identified client device type. For example, if the device type of client access device 120-1 can process delivered media formatted in the WML protocol, upon receiving a request for delivered media from the client access device 120-1, the MODS 100 can transcode the delivered media from the default format to WML.

In one representative embodiment of the invention, whenever a client device, for example client device 110, attempts to access delivered media services through the MODS 100, the MODS 100 can attempt to identify device type of the client device 110. In particular, the MODS 100 can send an initial query to the client device 110 requesting that the client device 110 report its device type. Alternatively, the client device 110 can transmit the device type indication with the initial access request. Hence, the client device type can be identified with a minimum of communications required.

FIG. 2 illustrates an exemplary startup sequence between the MODS 100 and a client device 110-1. As shown in the figure, client device 110-1 can request media delivered from a MODS 100 and can issue a service request 200. MODS 100 can respond with a query 205, requesting the device type for client device 110-1. Client device 110-1 can respond with a device type reply 210. In addition to identifying the client device type, the MODS 100 can request additional information about the configuration of the client device 110-1 by issuing a capability request 215 to the client device 110-1. The client device 110-1 can report its configuration with a capability reply message 220. Alternatively, the MODS can assume a default configuration based on the device type provided in the device type reply 210.

Configuration information can include, but is not limited to screen characteristics, such as size, color or grayscale, I/O capabilities such as speakers, printer types, supported media formats and buffer size. While it might be preferable to acquire the configuration information dynamically, it should readily be understood by one skilled in the art that alternative methods are possible without departing from the spirit of the invention. For example, the client device configura-

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tion information could be acquired at the time a user subscribes to a delivered media subscription. Alternatively, the client device configuration information can be provided manually. Finally, the client device configuration information can be acquired from client device configuration data which can be pre-stored in a database and indexed according to client device type or user.

In a representative embodiment of the present invention, the client device **110-1** can have corresponding configuration information which has been pre-stored in static memory of the client device, such as a Read-Only-Memory (ROM). In consequence, the configuration information can be transferred electronically to the MODS **100** over the network **105**, either at the initial access or when the client device **110-1** accesses the network **105**. In the latter case, if there are changes to the client device configuration, the ROM can be reprogrammed such that the updated client device information can remain available to the MODS **100**.

Returning now to FIG. 2, the delivery of media from the MODS **100** to clients **100** can be a for-fee service wherein the user pays a fee in exchange for the on-demand delivery of media content, for example a movie or song. Accordingly, for security purposes, an authentication exchange between the client device **110** and the MODS **100** can be used to facilitate access to services and billing. There are various methods that are well known in the art that can be used to authenticate and grant access to particular network services. For example, the Secured Socket Layer (SSL) protocol uses a public key cryptography to authenticate and encrypt information that is transferred over the Internet using TCP/IP. Authentication and encryption can be used to secure the transmission of transaction messages **225** and **230** which can further the goals of ensuring a secure transaction.

Due to the varied nature of the type of communication links that can be used for communication between the client device **110-1** and the MODS **100**, the MODS **100** can attempt to evaluate the connection by using, for example, pacing stream **235**. Hence, MODS **100** could use the pacing stream **235** consisting of a regulated stream of messages sent to client device **110-1**, in order to ascertain the bandwidth of the connection. Metrics such as the arrival times and the interstitial times can be measured by the client device **110-1** and reported to the MODS **100** through a respond with bandwidth message **240**. These metrics then can be used to determine network latency and the bandwidth requirements. Although the metrics can be measured by the MODS **100**, in one representative embodiment, the metrics are measured by the client device **110-1**.

Referring now to FIG. 3, an alternative architecture to that disclosed in FIG. 1 is shown, wherein access to the MODS **100** is mediated by an ISP server **300**. From a network provider perspective, the MODS **100** does not have to be the same operating entity as that of the ISP server **300**. Hence, whenever the client device **110-1** attempts to access a service offered by the MODS **100**, the ISP **300** can mediate the transaction. Specifically, in one embodiment of the invention, a capability exchange can precede the MODS transaction for the delivered media. During the capability exchange, the ISP **300** can query the client device **110-1** for the client device type and can mediate the transaction between the MODS **100** and the client device **110-1** according to the identified client device type. In a further aspect of the invention, since the MODS **100** can store the delivered media, the delivered media can be sent to the client device **110-1** through the ISP server **300**.

Significantly, the MODS **100** can store bookmarks within the local memory of the MODS **100**. The bookmarks can be

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used in the conventional sense inasmuch as the bookmarks can store a location in the delivered media related to a position in the delivered media which most recently had been transmitted to the client device **110-1**. Notably, the bookmark does not necessarily store the position in the delivered media which had been transmitted most recently to the client device **110-1**. Rather, the bookmark also can store a position preceding that position which had been most recently transmitted to the client device **110-1** so that the resumption of delivery of the delivered media at a later time can overlap the delivered media previously transmitted to the client-device **110-1**.

While the MODS **100** can retain a subscriber record which can contain a bookmark indicating the subscribers delivered media history, in one embodiment of the present invention, the ISP **300** can retain the subscriber record and the MODS **100** can retain at least a partial copy of the subscriber record. One reason for this system of dual retention is that a user may have several bookmarks of which many may never be used. Notably, the several bookmarks may have been created based upon the delivery of media to a single client device or to a plurality of different client devices having differing formats. As an example, in the architecture shown in FIG. 3, since the ISP **300** provides the delivered media received from the MODS **100** to the client device **110-1**, the ISP **300** maintains the subscriber record.

In a further aspect of the invention, copies of the bookmark can be stored both at the ISP **300** and at the MODS **100**. In consequence, in the event the copies of the bookmark fall out of synchronization, such as can happen whenever there is a power outage during a software upgrade, then the user of a client device **110-1** can be given the option to select which copy of the bookmark is the correct copy. Once the correct version of the bookmark has been identified, the correct version can be used to overwrite the incorrect version of the bookmark. The process of updating mismatched copies of the same bookmark can be encoded in a Java applet. Specifically, when a request is made to access information in a time code field of the bookmark record stored in the ISP **300**, the copy of the bookmark stored in the MODS **100** can be checked to ensure that the time code entries are the same. In the case where the time code entries are not the same, the Java applet can request that the user select the correct bookmark.

FIG. 4 illustrates an exemplary bookmark. Information contained in the exemplary bookmark can be categorized into three major categories—data used to uniquely identify the user **400**, data used to uniquely identify the delivered media **405** and data unique to the last presentation of at least a portion of particular delivered media **410**, **415**, **420**, **425**, **430**, **435**, **440**. Finally, the bookmark can include a duration field **445** for indicating the last viewed segment or the cumulative time for the completed portions of delivered media. Still, it should be readily understood by one skilled in the art that other information may be included without departing from the spirit of the invention. For example, the bookmark can include user device type and capability information, device type configuration data as well as other security information. If there are a number of bookmarks associated with the delivery of particular delivered media to a particular user, the entries in the table can be duplicated to represent each bookmark.

Notably, the data unique to the last presentation of at least a portion of particular delivered media can include, but is not limited to, a MODS identification **415** which can be used to identify a particular MODS from which delivered media can be transmitted to a client in a particular delivery session, a

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delivered media identifier **420** for identifying particular delivered media to be delivered from the current MODS, a time code **425** of the last viewed second of the delivered media, a time code **430** of the beginning of the last scene/frame/tract in progress, a last format indicator **430** which can specify the format of delivered media last delivered to a client device, for example, MPEG or WML, and a transaction identifier **440** that can be used as a reference to the current transaction between the MODS or ISP and the client device.

FIG. 5 is a communication flow diagram which can illustrate the communication occurring between the MODS **100** and the ISP **300** as shown in FIG. 3. The steps used to determine the client device type and delivered media format are not shown since they are similar to that illustrated in FIG. 2, the only difference being that the determination is performed within an ISP. As shown in FIG. 5, presumably in response to a user request to receive specified delivered media, a MODS **100** can be selected to deliver the specified delivered media.

Once a MODS **100** has been selected, the ISP server **300** can issue a service request **500** to the MODS **100**. The service request **500** can contain the delivered media identification and format. Subsequently, the MODS **100** can acknowledge the service request **500** with a response **505**. While often it can be preferable to ensure the security of an online transaction, for example the online verification of a user identity and corresponding payment authorization as shown in steps **510** and **515**, one skilled in the art will recognize that the security measures illustrated in FIG. 5 are optional.

Following the securing of the communications link in steps **510** and **515**, the ISP **300** can confirm the availability of the appropriate format of the delivered media by transmitting an availability message to the MODS **100** in step **520**. Additionally, in order to determine the bandwidth requirements, the ISP **300** can send a pacing message **525** to the MODS **100**. In response, the MODS **100** can send to the ISP **300** a response **530** having the appropriate statistics/measurements necessary to determine the required bandwidth. Still, as one skilled in the art will recognize, steps **525** and **530** are optional and the absence of steps **525** and **530** or the addition of supplemental steps will not detract from the spirit of the invention. For instance, in an alternative embodiment, steps **525** and **530** can be periodically repeated to evaluate and dynamically adjust the bandwidth settings to ensure acceptable Quality of Service.

The ISP **300** can query a bookmark associated with the requested delivered media and the requesting user. From the queried bookmark, the ISP **300** can identify a position from which to resume (or begin as the case may be) delivery of the requested delivered media. Specifically, in step **535** the ISP **300** can request the MODS **100** to begin transmission of the delivered media at the time code indicated by the specified bookmark. After determining the particular position within the delivered media corresponding to the time code in the bookmark, the MODS **100** can resume (or begin) transmission of the delivered media as shown in step **540**.

After some time has elapsed, a terminate request for terminating transmission of the delivered media can be received in the ISP **300**, possibly from the client device. In response, a request for termination can be transmitted to the MODS **100** in step **545**. In response, in step **550** the MODS **100** can terminate the transmission of the delivered media. Additionally, in a representative embodiment in which the ISP **300** stores the bookmark, the time code can be sent from the MODS **100** to the ISP **300**. Moreover, other suitable

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information necessary for creating a new bookmark and for generating user charges for receiving the delivered media can be sent to the ISP **300**.

FIG. 6 illustrates a further embodiment of the invention, in which a plurality of MODS **100** can provide delivered media in various formats to a plurality of ISPs **610**. Each format can be selected according to the requirements of various client device types associated with one of a plurality of requesting client devices **615**, **620**. Referring to FIG. 6, an exemplary network having a plurality of MODS **100** and a plurality of ISPs **610** each servicing a different client device type is disclosed. ISP **610-2** interconnects wireless client devices **620-1**, **620-2** and **620-3** to the Internet **305**. Similarly, ISP **610-1** interconnects client devices **615-1** and **615-2** to the Internet network **605** via a coaxial cable. In the depicted arrangement, a subscriber can have multiple devices each having its own methodology of accessing the services provided by the MODS **100** through a different ISPs **610**. A plurality of MODS **100** such as MODS **100-1**, **100-2** and **100-3** can be deployed within the network to more efficiently serve the ISPs **610**.

Notably, an Internet Media Aggregator (IMA) **600** can be provided to store bookmarks and to facilitate the conversion of delivered media from a format compatible with one client device type to a format compatible with another client device type. Specifically, delivered media in a format compatible with a first client device type can be retrieved from the MODS **100** by the IMA **600** and dispatched to the first client device without modification. The delivered media in the MODS **100** also can be retrieved by the IMA **600** and dispatched to a second client device. With regard to the second client device however, the IMA **600** can convert the delivered media from a format compatible with the first client device type into a format compatible with the second destination device type.

For example, with reference to FIG. 6, consider the case where a user is at home and has a desire to watch an interactive video presentation on client device **615-2**. Client device **615-2** can be used to access the Internet **305** via the ISP server **610-1**. The interactive video presentation can be stored in the MODS **100-1** in a global format, for example MPEG-II, recognizable by the client device **615-2**. ISP server **610-1** can request IMA **600** to acquire the interactive video presentation from the MODS **100-1**.

Once the IMA **600** receives the video presentation, it can determine the appropriate format in which to deliver the presentation to the client device **615-2**. Based upon the configuration information of client device **615-2**, IMA **600** can determine that there is no need to convert the format of the presentation since the client device is capable of accepting an MPEG-II format. Therefore, IMA **600** can deliver the video presentation to the client device **615-2** via ISP server **610-1**.

However, due to prior engagements, the user may have to leave home for the airport where he/she is stranded for a few hours. Before leaving home, the user terminates the transmission of the presentation. In consequence, a bookmark of the position in the presentation where the viewing stopped can be recorded in a bookmark stored in the memory of IMA **600**. Subsequently, while waiting at the airport, the user can access the network **305** via ISP server **610-2** using client device **620-1**. As a result, the ISP server **610-2** can request that the IMA **600** resume the transmission of the interactive video presentation. In particular, the IMA **600** can consult the bookmark and can determine the position in the presentation which had been most recently transmitted to the user's home prior to the user's termination of the transmission.



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Once the position has been determined, the IMA 600 also can determine the format compatible with the client device type of the client device 620-1. Specifically, the format can be determined from the configuration information of client device 620-1. Suppose the client device 620-1 can only accept the presentation of delivered media in QuickTime format. As such, IMA 620-1 can convert the MPEG2 format of the delivered media received from the MODS 100-1 into QuickTime format compatible with the client device 620-1. Once the conversion from MPEG2 to QuickTime is complete, IMA 600 can deliver the video presentation to the client device 620-1 via the ISP server 610-2 in a format suitable for receipt by the client device 620-1. Additionally, the IMA 610-2 can request the transmission of the presentation to begin at a point in the presentation defined by the time code field of the bookmark.

In an alternative embodiment, different formats corresponding to each of the supported device types can be stored on one or more of the servers. For example, before doing the conversion from MPEG2 to QuickTime, the IMA 600 could have queried MODS 100-2 to determine if a QuickTime format of the video presentation was already stored in the MODS 100-2. Since MODS 100-2 already had a QuickTime format copy of the presentation, the IMA 600 could have download that copy to the MODS 100-2 rather than having to perform a duplicate conversion of the presentation from MPEG2 to QuickTime.

A further embodiment of the invention can arise in the circumstance of the present example in which the user had forgotten to terminate the session at home because of an urgency to arrive at the airport by a particular time. Once the user accesses the ISP 300 from the airport using client device 620-1, the user can request that the IMA 600 terminate the session in progress with client device 615-1. Subsequently, the user can request that the IMA 600 continue the video presentation session on the client device 620-1.

Notably, since no bookmark previously existed because the user forgot to terminate the session at home, the user can be given the option of estimating a time code that can be proportional to the time of the presentation length. For example, if the video presentation was 2.5 hours (2 hrs:30 mins:00 secs), then entering a time code of 1:30:23 would correspond to a time stamp of 1 hour, 30 minutes and 23 seconds. Hence, if the user wanted to watch the last hour of the video presentation, then the user would enter 01:30:00 as the time code. In order to differentiate this time code from an actual time code, an asterisk (\*) could be placed next to the time code to show that it was fictitious.

After the time code has been entered, the IMA 600 can attempt to find a QuickTime format of the video presentation stored on a MODS 100 or convert delivered media in MPEG2 format in MODS 100-1 to QuickTime format. The video presentation then can be streamed from the IMA 600 to the client device 620-1 starting from the entered time code.

A yet further embodiment of the invention can arise in the circumstance of the present example in which the user bookmarked the video presentation before leaving home but intentionally allowed the video presentation to run since someone else at home was watching the video presentation. In this case, when the user arrives at the airport, if the session at home is still in progress, the user can request that the IMA 600 create an additional stream for viewing the presentation on client device 620-1. The user can be charged for additional presentation time and the presentation can begin from the position indicated in the bookmark that the user created before leaving home.

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Notably, with regard to the bookmark described herein, it should readily be understood by one skilled in the art that a bookmark does not have to represent the exact point at which the media was discontinued. To compensate for delay or other transitory loss, the bookmark may be placed at a point prior to the actual point of discontinuance of transmission. For example, using a time based bookmark reference, the bookmark may be placed at ten seconds prior to the actual point of discontinuance. Alternately, the bookmark could be placed at the point of discontinuance, and whenever resumption of the media occurs, the resumption is started at a point, for example, 10 seconds prior to the actual point of discontinuance. In addition to using relative time or location based methods for the bookmark, other schemes employing translation of the physical location or time or any combination thereof, may be utilized.

The present invention can be realized in hardware, software, or a combination of hardware and software. Machine readable storage according to the present invention can be realized in a centralized fashion in one computer system, or in a distributed fashion where different elements are spread across several interconnected computer systems. Any kind of computer system or other apparatus adapted for carrying out the methods described herein is acceptable. A typical combination of hardware and software could be a general purpose computer system with a computer program that, when being loaded and executed, controls the computer system such that it carries out the methods described herein. The present invention can also be embedded in a computer program product which comprises all the features enabling the implementation of the methods described herein, and which when loaded in a computer system is able to carry out these methods.

A computer program in the present context can mean any expression, in any language, code or notation, of a set of instructions intended to cause a system having an information processing capability to perform a particular function either directly or after either or both of the following: (a) conversion to another language, code or notation; and (b) reproduction in a different material form. The invention disclosed herein can be a method embedded in a computer program which can be implemented by a programmer using commercially available development tools.

The invention claimed is:

1. A method for providing configurable access to media in a media-on-demand system comprising the steps of:
  - delivering the media to a first client device through a first communications link, wherein the media is configured in a format compatible with identified device properties of said first client device and said first client device is associated with a first user;
  - recording a bookmark specifying a position in the media; and
  - delivering the media to a second client device through a second communications link, said delivery to said second client device beginning at said position specified by said recorded bookmark, wherein the media is configured in a format compatible with identified device properties of said second client device and said second client device also is associated with said first user.
2. The method according to claim 1, further comprising the steps of:
  - identifying device properties for each of said first and second client devices, device properties of said first client device being identified prior to commencing delivery of the media to said first client device and

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device properties of said second client device being identified prior to commencing delivery of the media to said second client device.

3. The method according to claim 2, wherein the media is stored in a media-on-demand server (MODS) and delivered to said first and said second client devices via said first and said second communications link respectively.

4. The method according to claim 3, wherein said step of delivering the media to said first client device via said first communications link, comprises:

receiving the media from said MODS in an intermediate server;

in said intermediate server, converting the media to a format compatible with said identified device properties of said first client device; and

delivering said converted media to said first client device via said first communications link.

5. The method according to claim 3, wherein said step of delivering the media to a second client device via said second communications link, comprises:

receiving the media in an intermediate server from said MODS;

in said intermediate server, converting the media to a format compatible with said identified device properties of said second client device; and

delivering said converted media to said second client device via said second communications link.

6. The method according to claim 3, further comprising:

storing the media in selected ones of a plurality of media-on-demand servers, each MODS in said plurality of media-on-demand servers storing the media in at least one format compatible with a selected device type;

selecting a MODS for delivering the media to said first client device, said selected MODS having stored thereon the media in a format compatible with said first client device; and

delivering from said selected MODS the media in a format compatible with said first client device.

7. The method according to claim 6, wherein said selecting step further comprises:

determining if a MODS is available for delivering the media to said first client device in a format compatible with said first client device;

if it is determined that a MODS is not available for delivering the media to said first client device in a format compatible with said first client device, selecting a MODS for delivering the media to said first client device, said selected MODS containing the media in a standard format, and converting the media in said standard format to a format compatible with said first client device.

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8. The method according to claim 3, further comprising:

storing the media in selected ones of a plurality of media-on-demand servers, each MODS in said plurality of media-on-demand servers storing the media in at least one format compatible with a selected device type;

selecting a MODS for delivering the media to said second client device, said selected MODS having stored thereon the media in a format compatible with said second client device; and

delivering from said selected MODS the media in a format compatible with said second client device.

9. The method according to claim 8, wherein said selecting step further comprises:

determining if a MODS is available for delivering the media to said second client device in a format compatible with said second client device;

if it is determined that a MODS is not available for delivering the media to said second client device in a format compatible with said second client device, selecting a MODS for delivering the media to said second client device, said selected MODS containing the media in a standard format, and converting the media in said standard format to a format compatible with said second client device.

10. A method for providing configurable access to media in a media-on-demand system comprising:

delivering the media to a first client device in a first format compatible with said first client device, wherein said first client device is associated with a first user;

interrupting said delivery of said media;

recording a bookmark specifying a position in the media when said interruption occurred; and

resuming delivery of the media to a second client device in a second format compatible with said second client device, said resumed delivery beginning at a position in the media specified by said recorded bookmark, wherein said second client device also is associated with said first user.

11. The method according to claim 10, further comprising the steps of:

identifying a device type for each of said first and second client devices;

delivering the media to said first client device in said first format, said first format selected based upon said identified device type for said first client device; and,

delivering the media to said second client device in said second format, said second format selected based upon said identified device type for said second client device.

\* \* \* \* \*

(12) **United States Patent**  
**Ellis et al.**

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(45) **Date of Patent:** **Jun. 20, 2006**

(54) **CLIENT-SERVER ELECTRONIC PROGRAM GUIDE**

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21, 1998.

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**G06F 6/00** (2006.01)  
**H04N 5/445** (2006.01)

(52) **U.S. Cl.** ..... **715/719; 725/53**

(58) **Field of Classification Search** ..... **715/716-722,**  
**715/744, 745; 725/37-61**  
See application file for complete search history.

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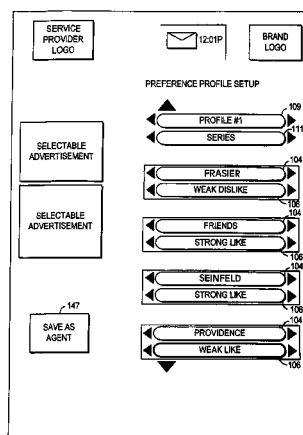
*Assistant Examiner*—Lê Nguyen

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(57) **ABSTRACT**

A client-server interactive television program guide system is provided. An interactive television program guide client is implemented on user television equipment. The interactive television program guide provides users with an opportunity to define expressions that are processed by the program guide server. The program guide server may provide program guide data, schedules reminders, schedules program recordings, and parentally locks programs based on the expressions. Users' viewing histories may be tracked. The program guide server may analyze the viewing histories and generates viewing recommendations, targets advertising, and collects program ratings information based on the viewing histories.

**24 Claims, 39 Drawing Sheets**



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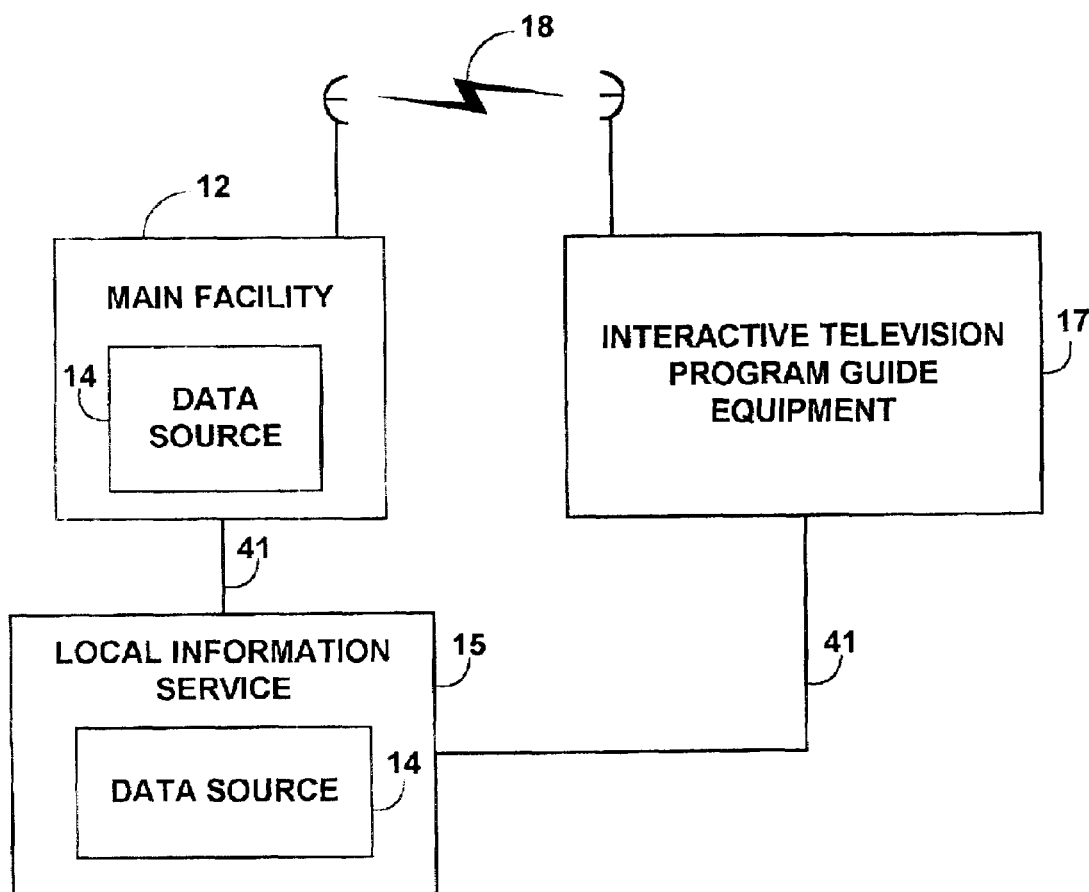


FIG. 1

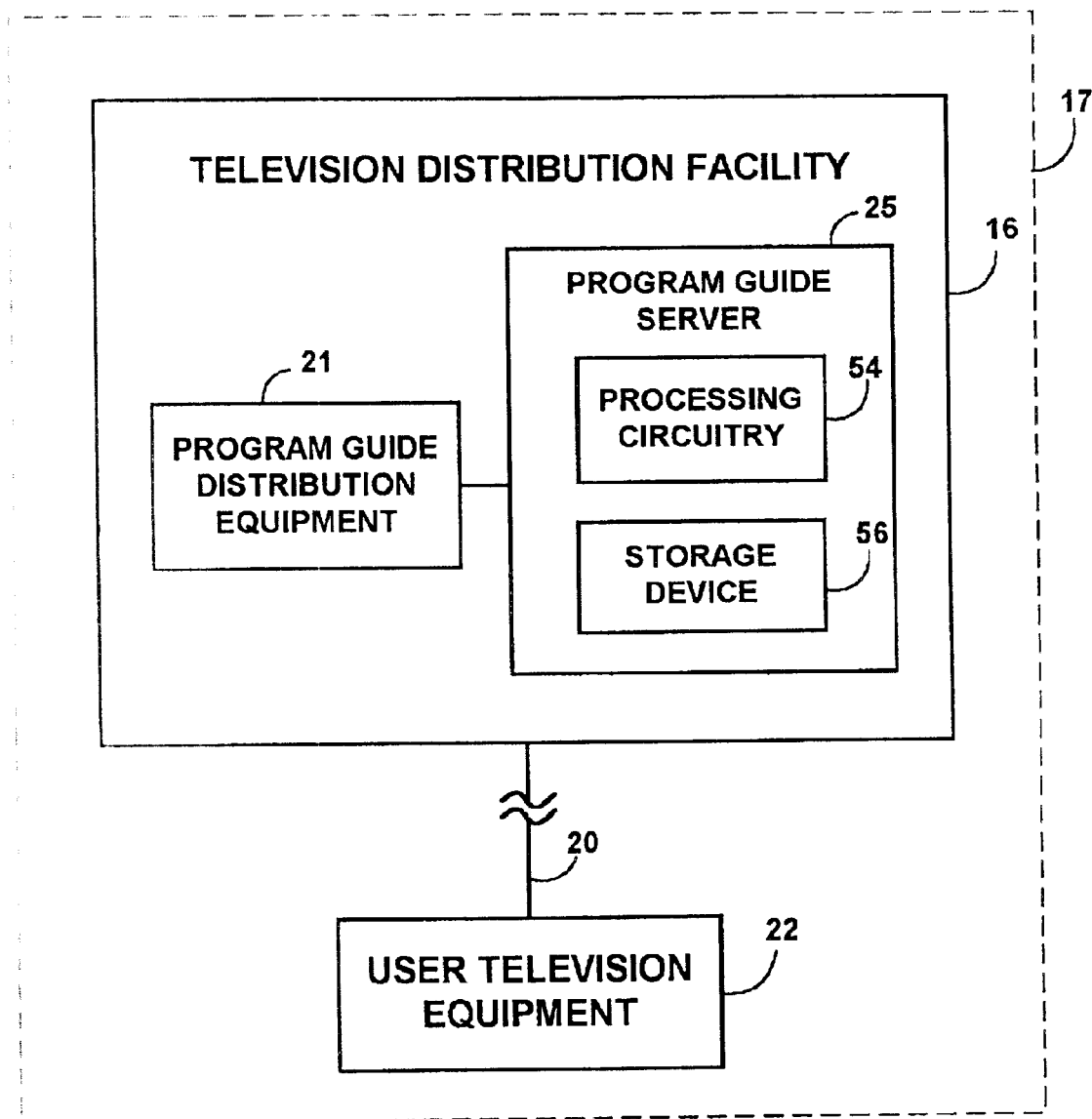


FIG. 2a

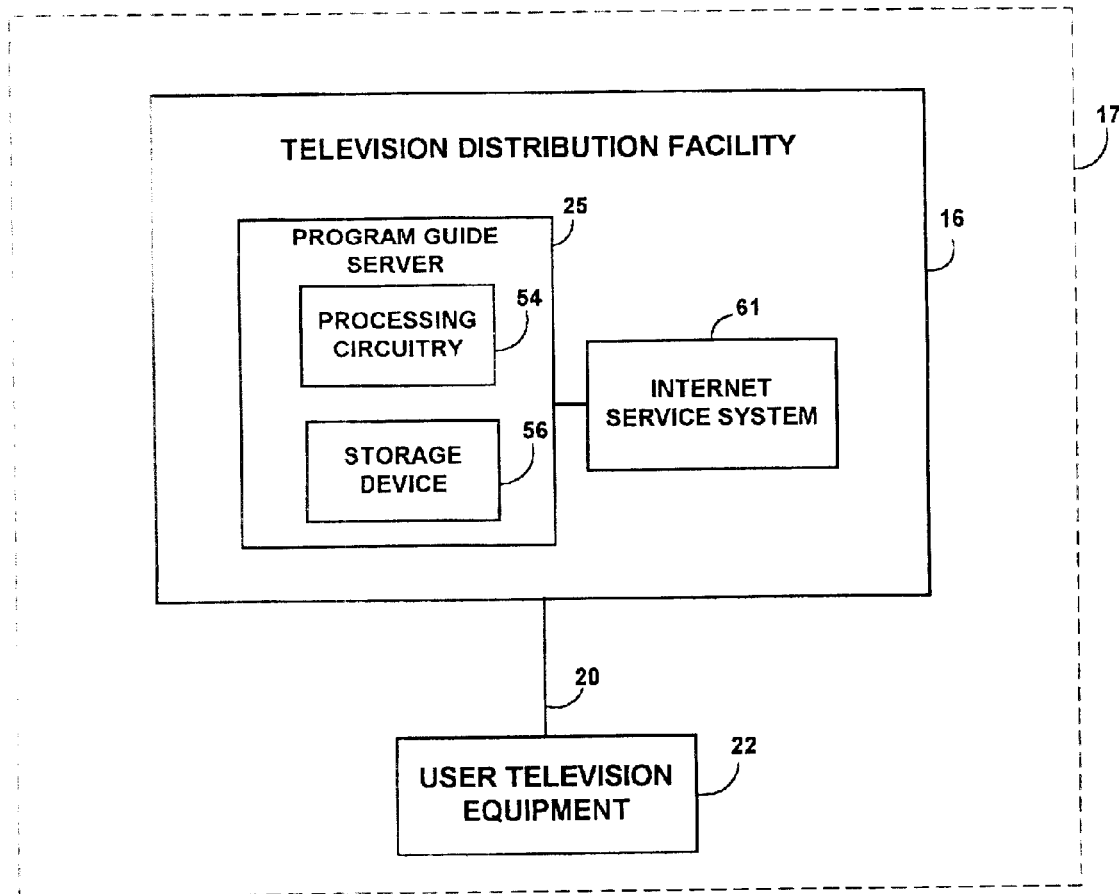


FIG. 2b

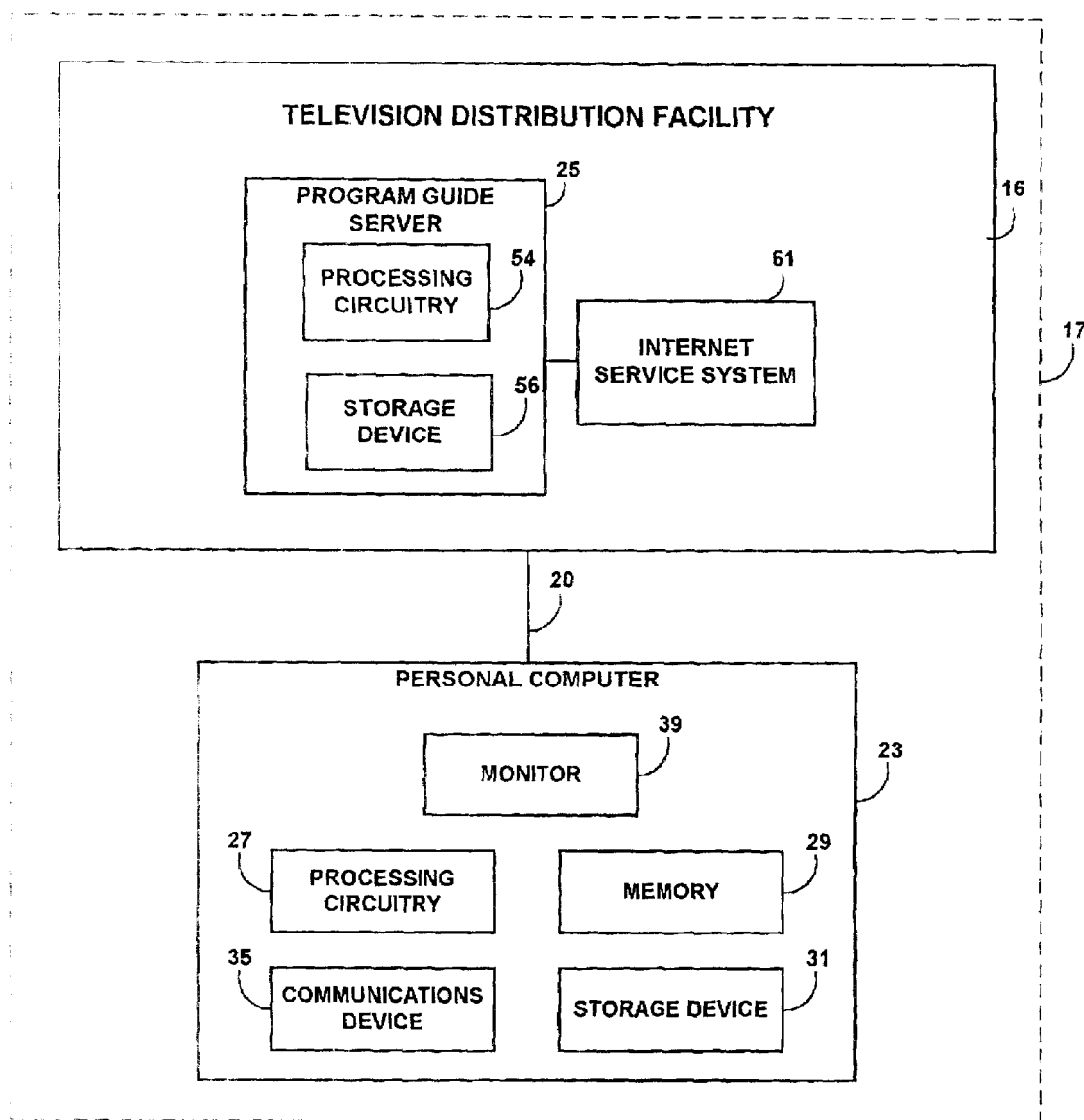


FIG. 2c



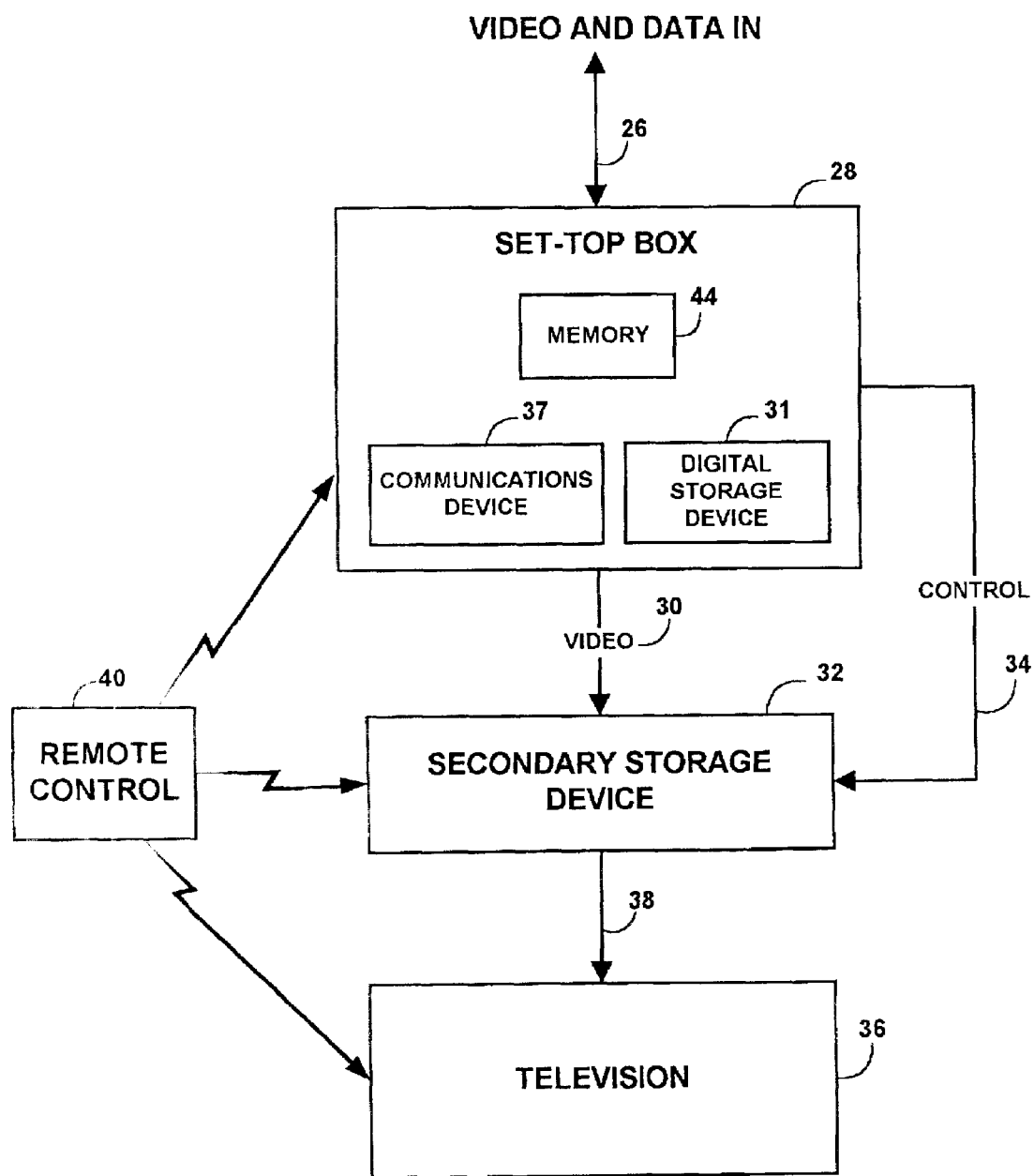


FIG. 3

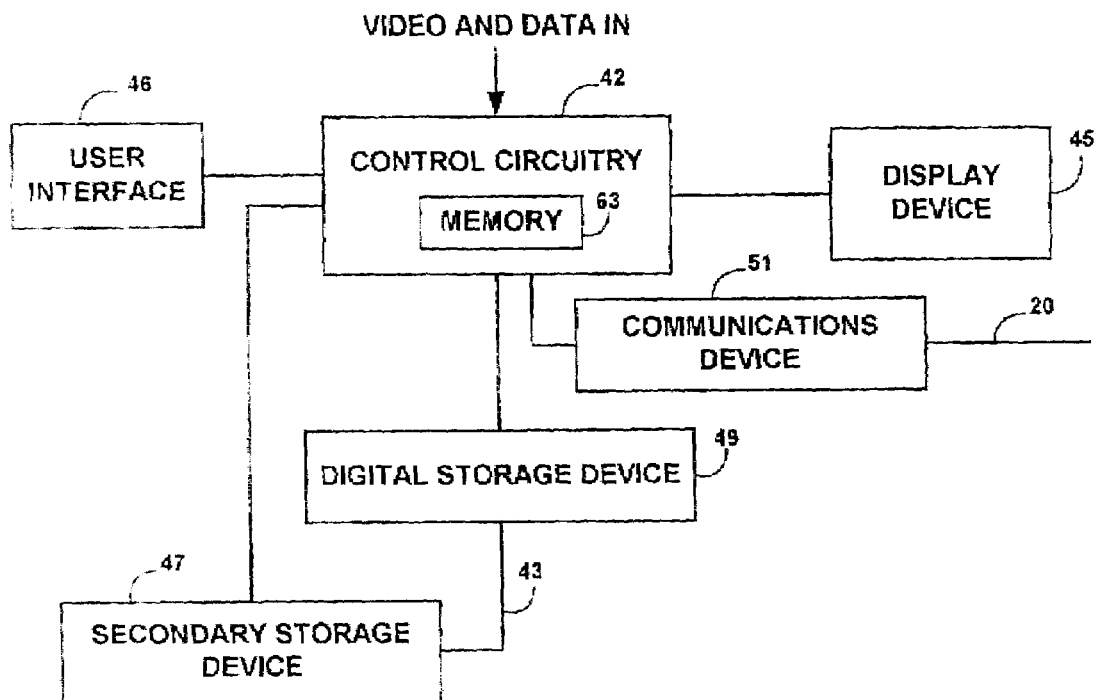


FIG. 4

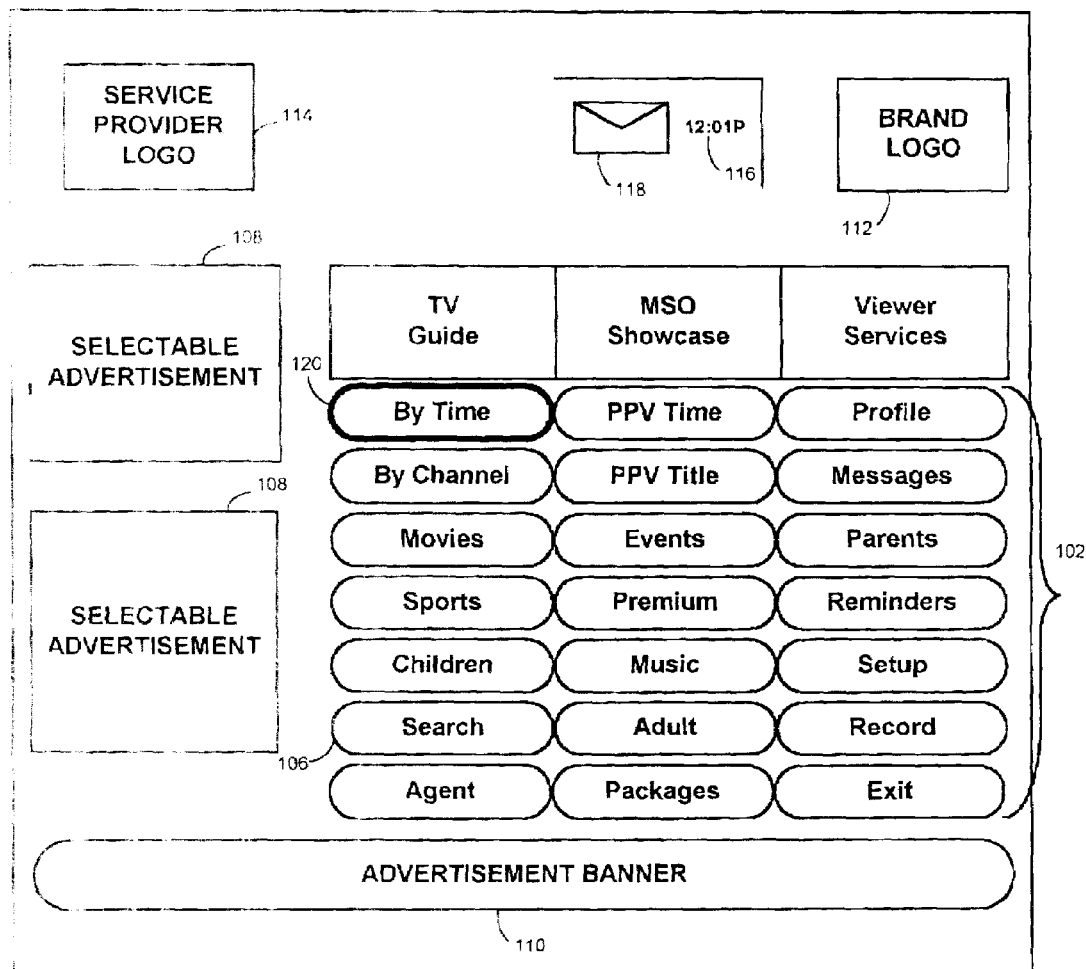


FIG. 5

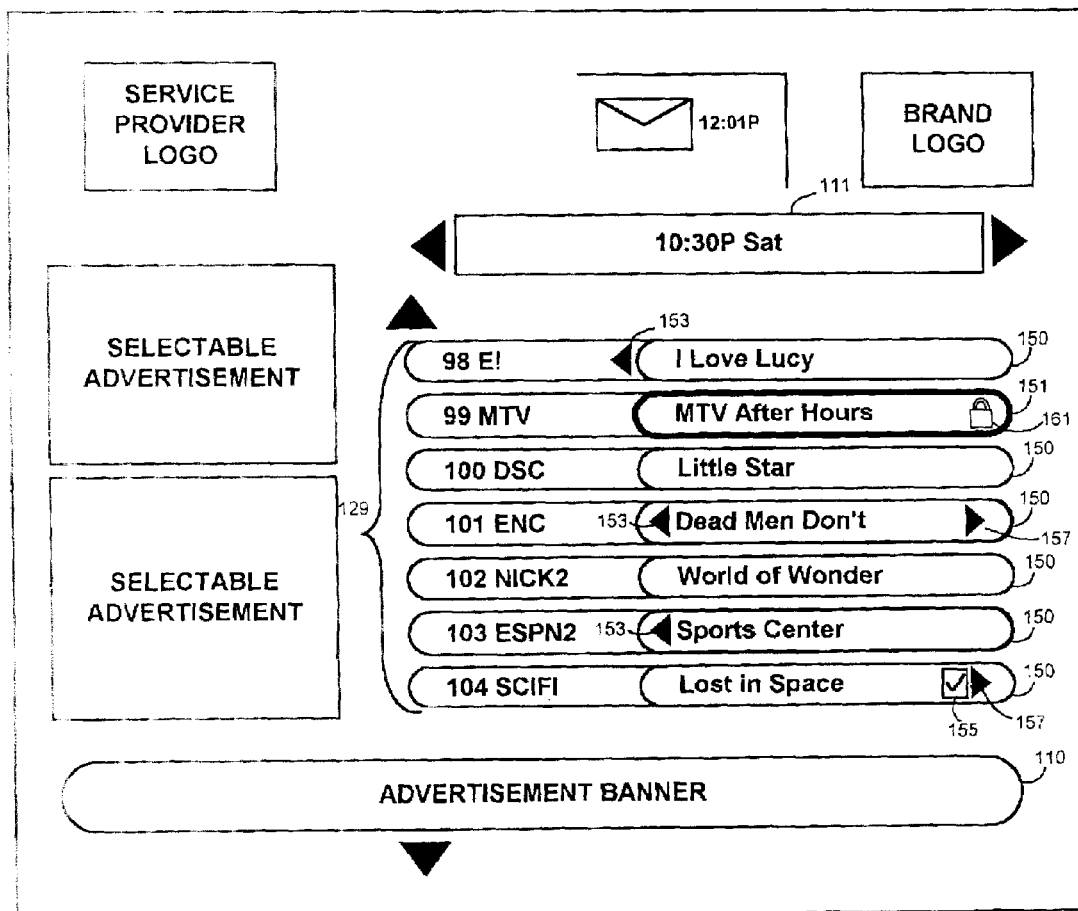


FIG. 6

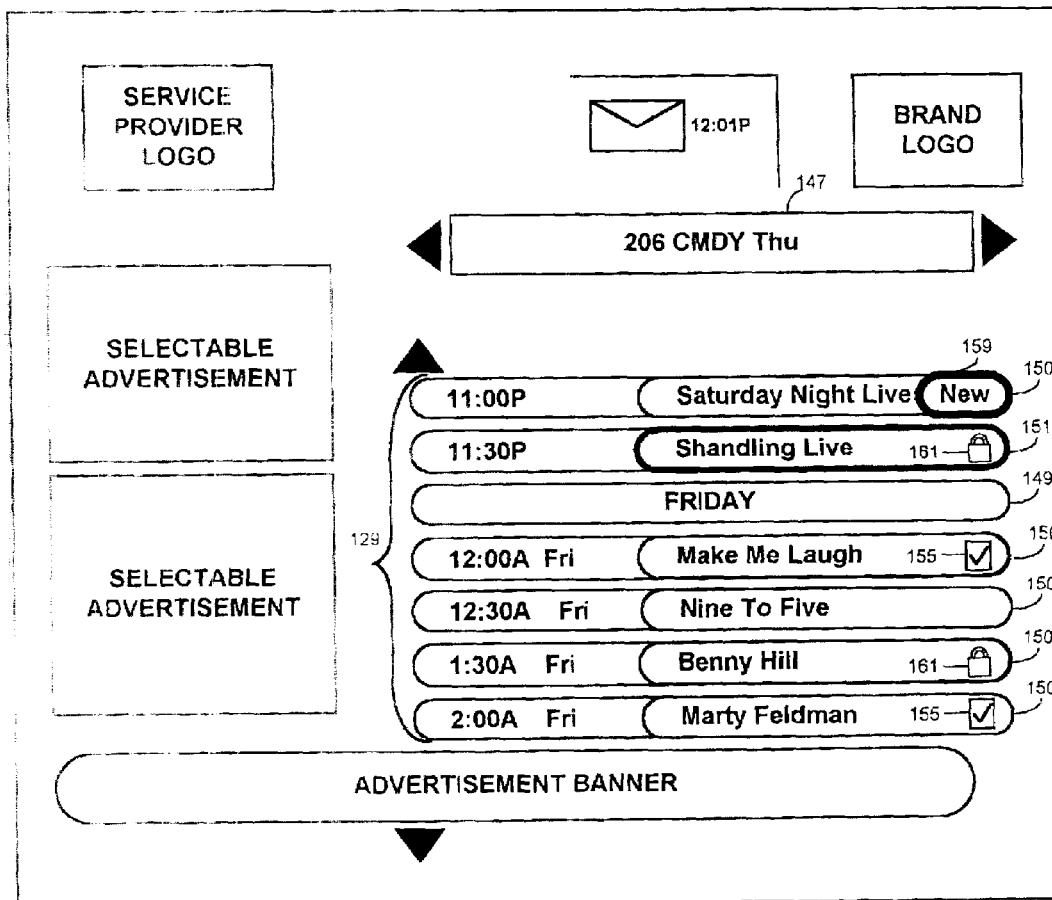


FIG. 7

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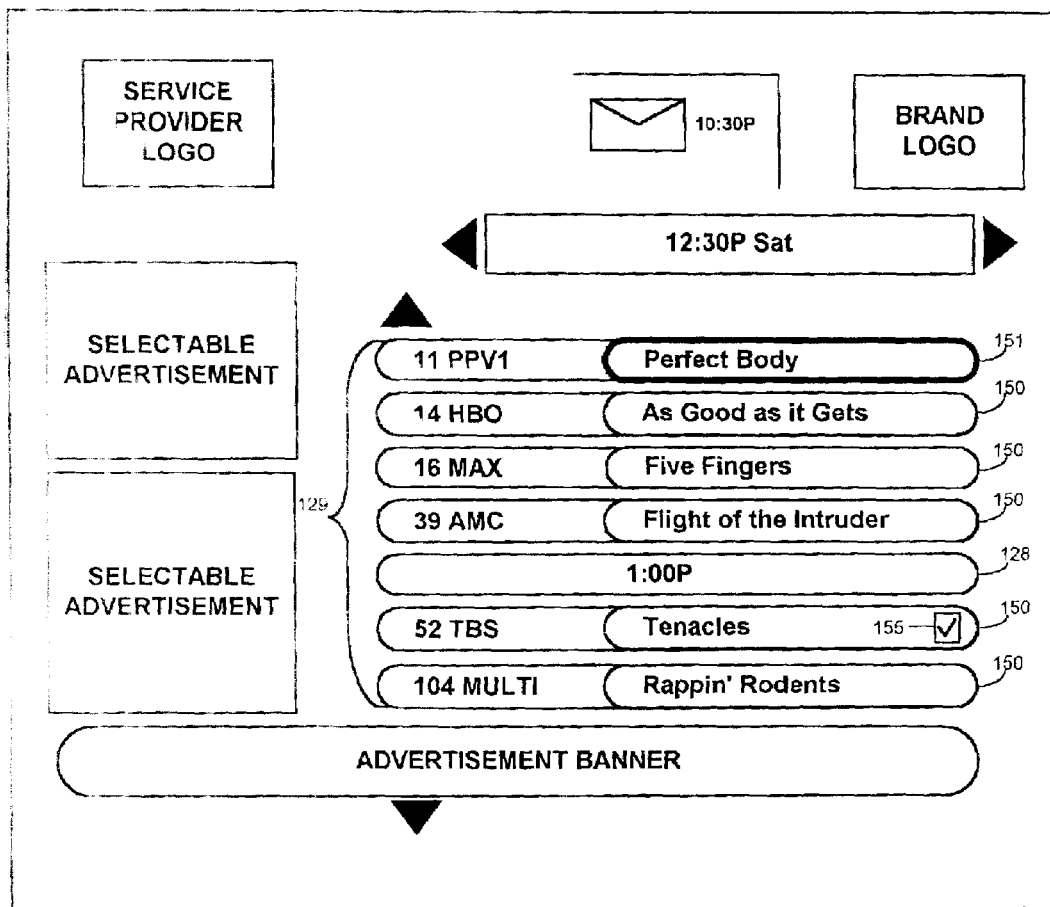


FIG. 8a

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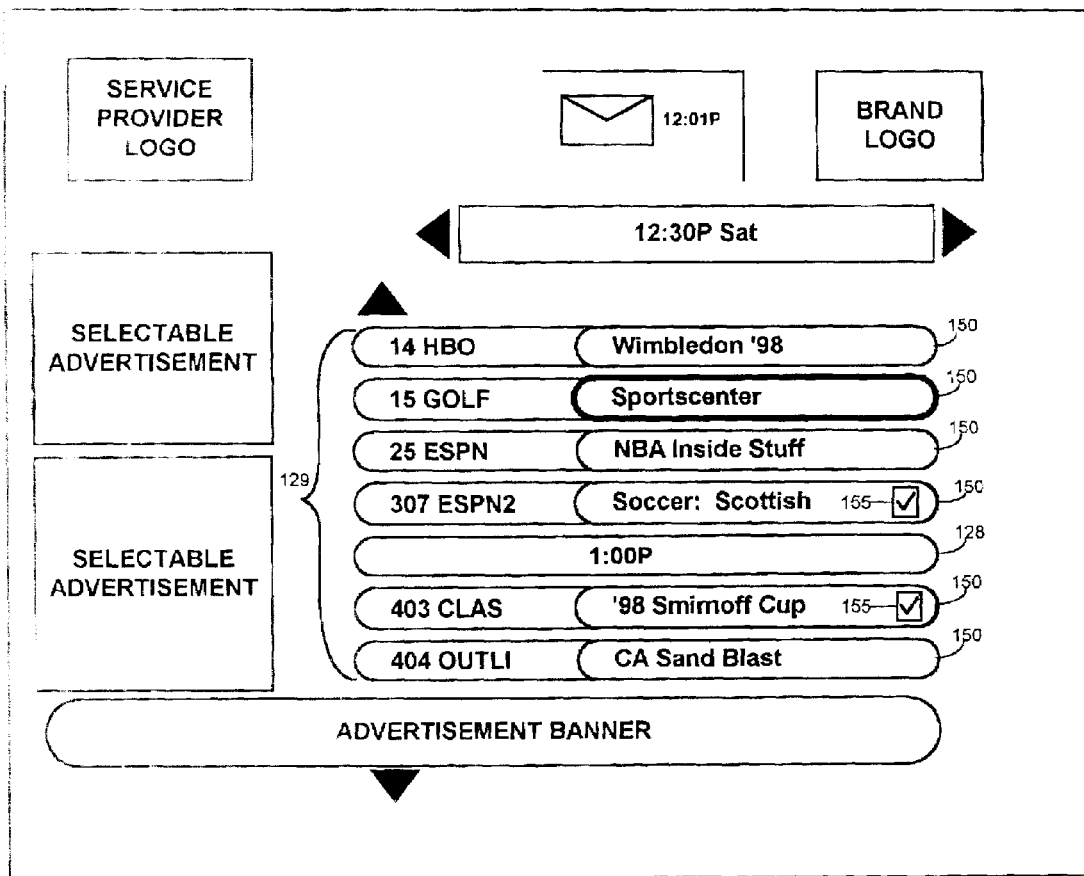


FIG. 8b

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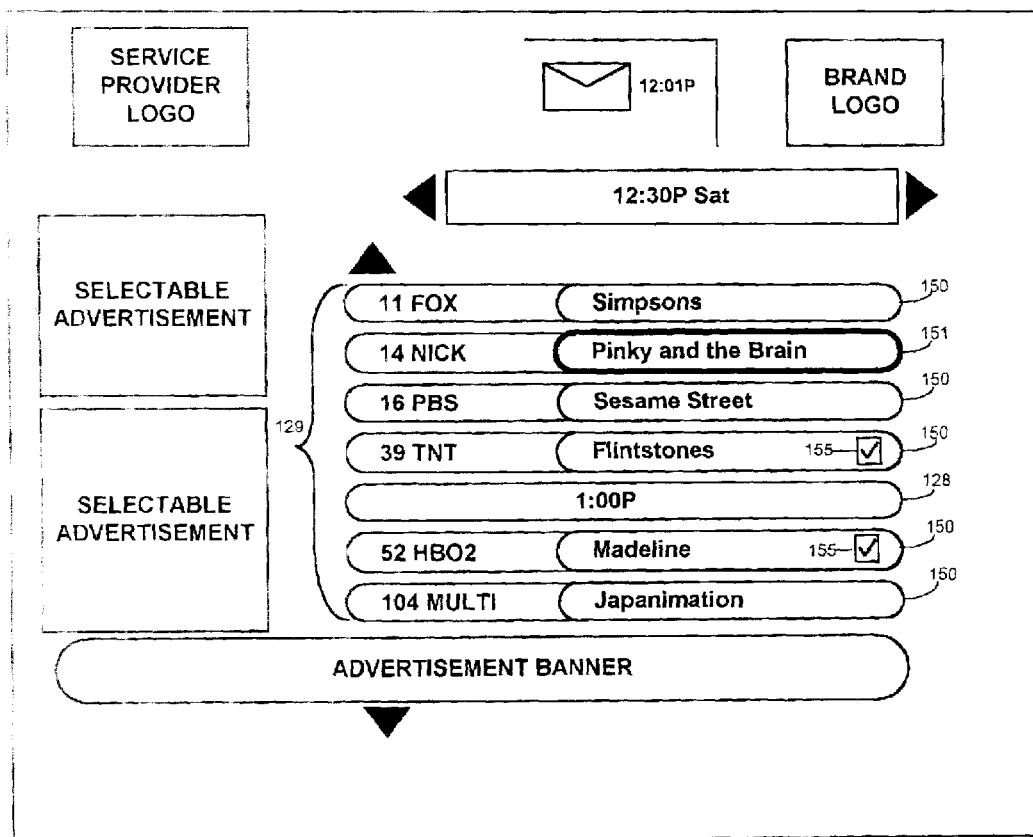


FIG. 8c

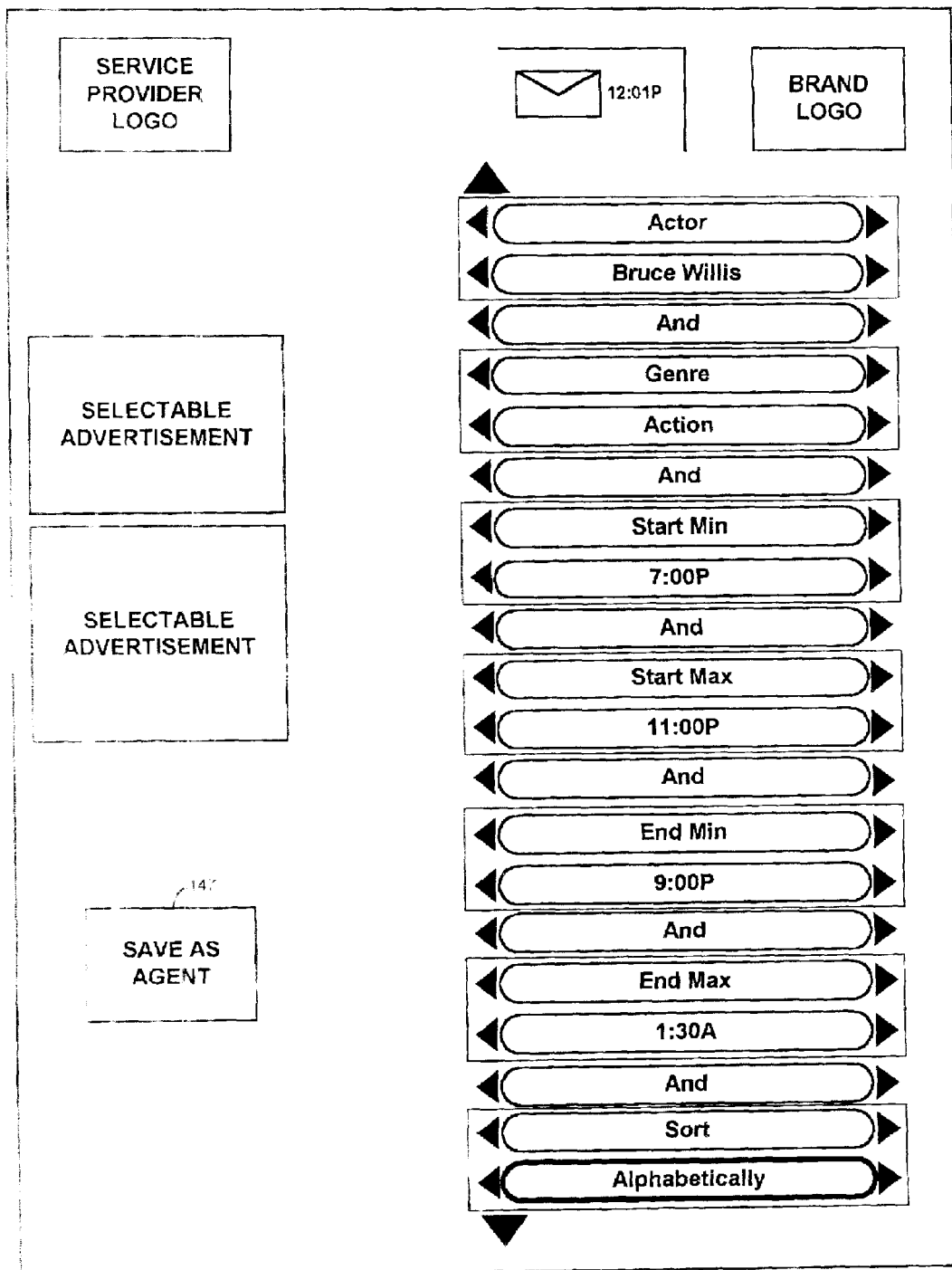


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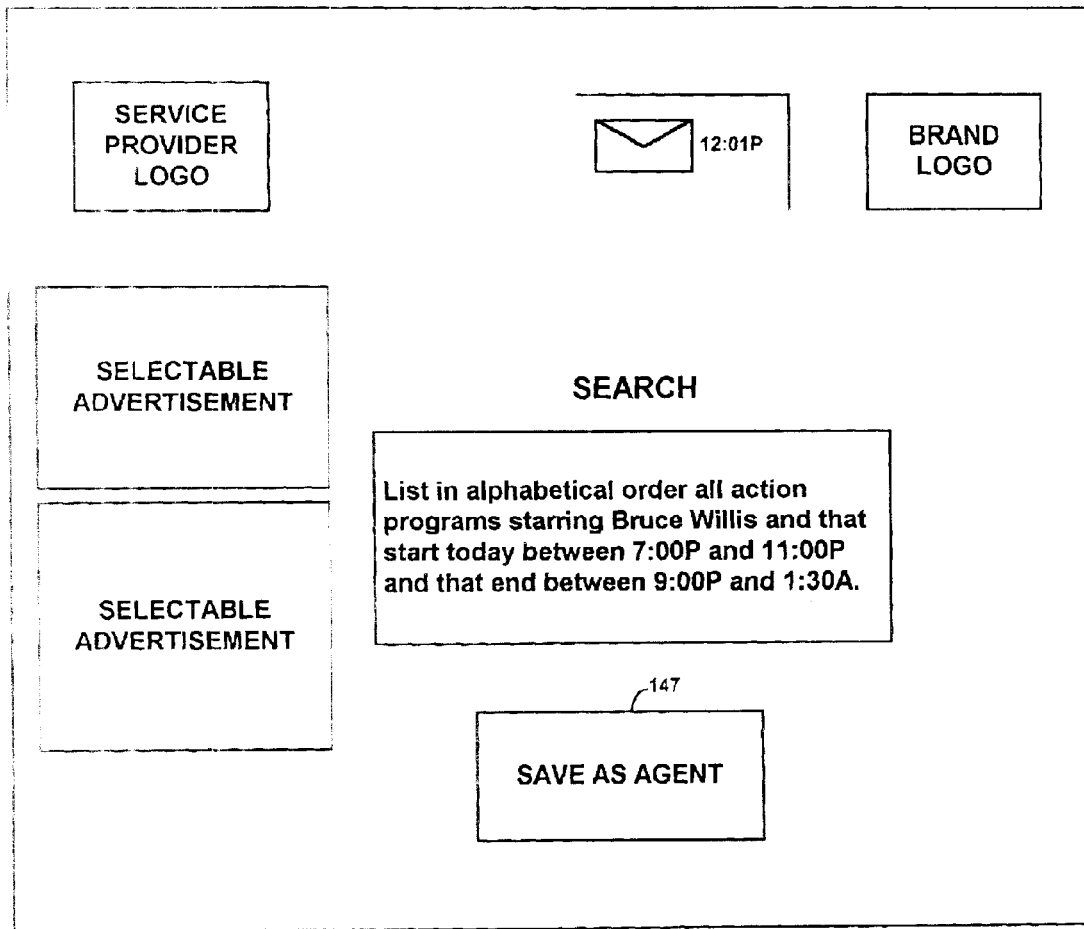


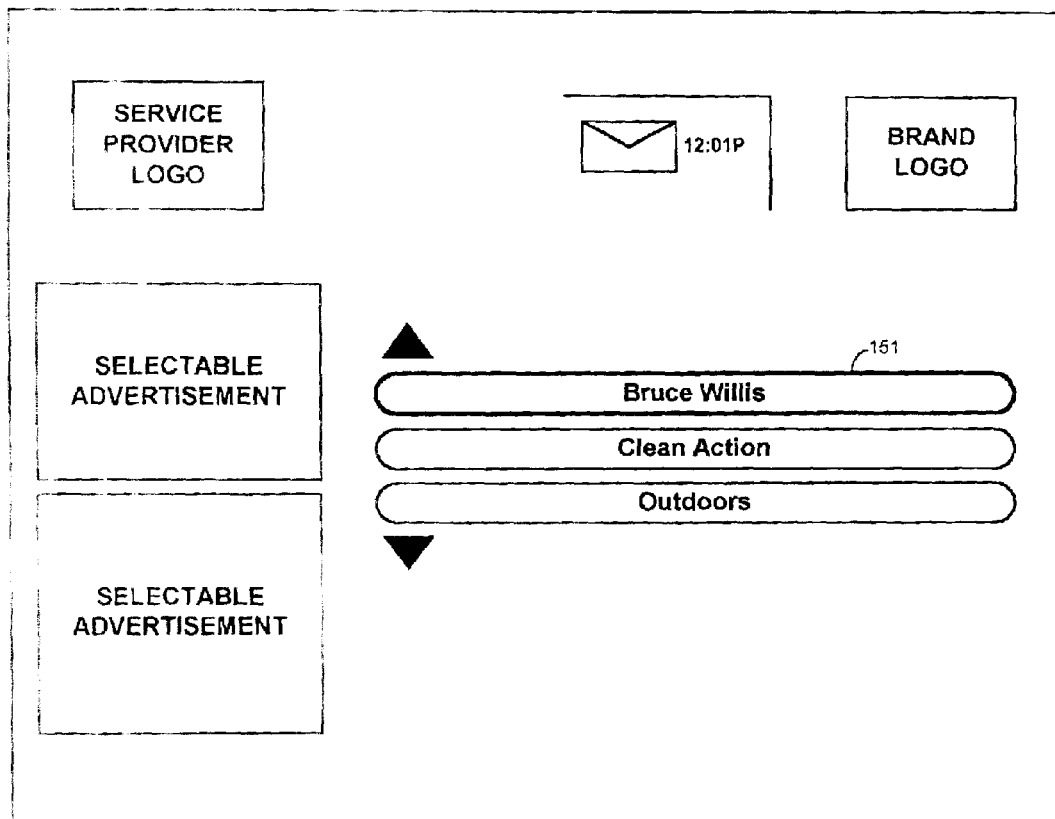
FIG. 9b

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**FIG. 10**

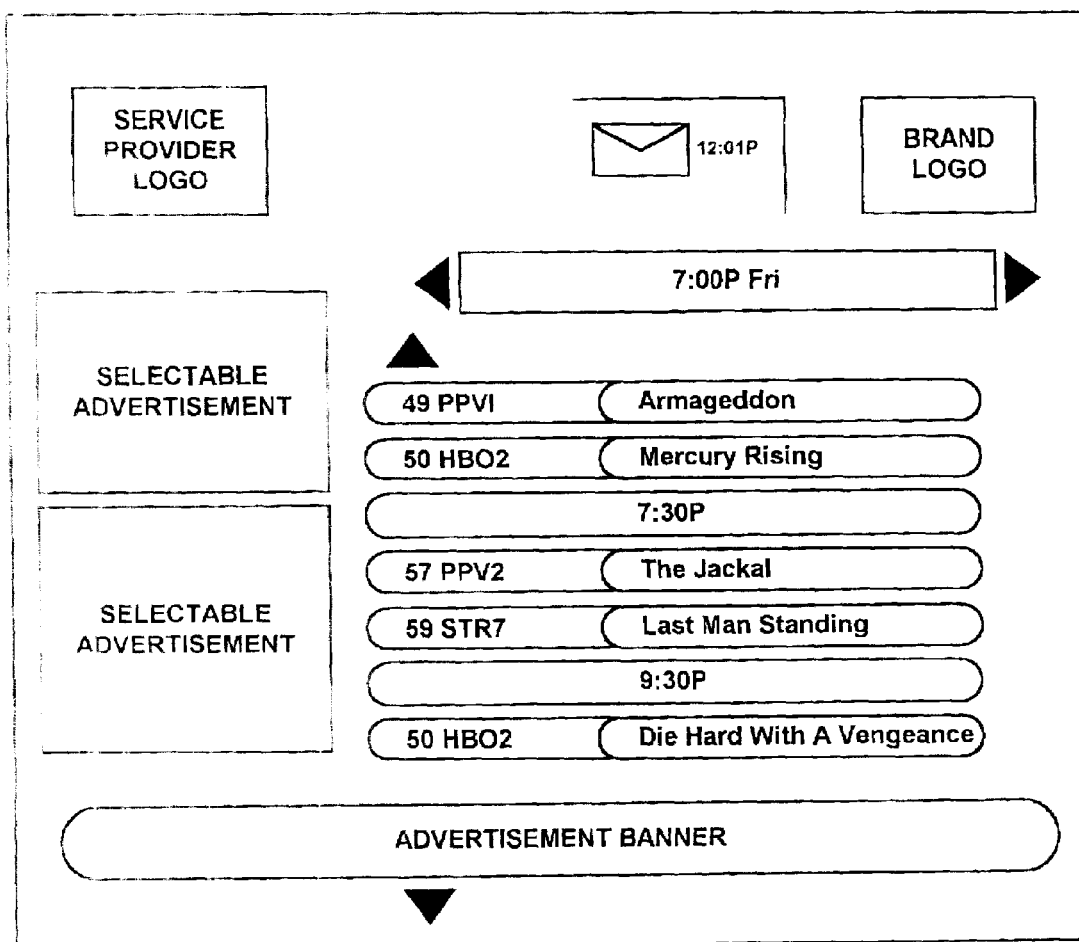
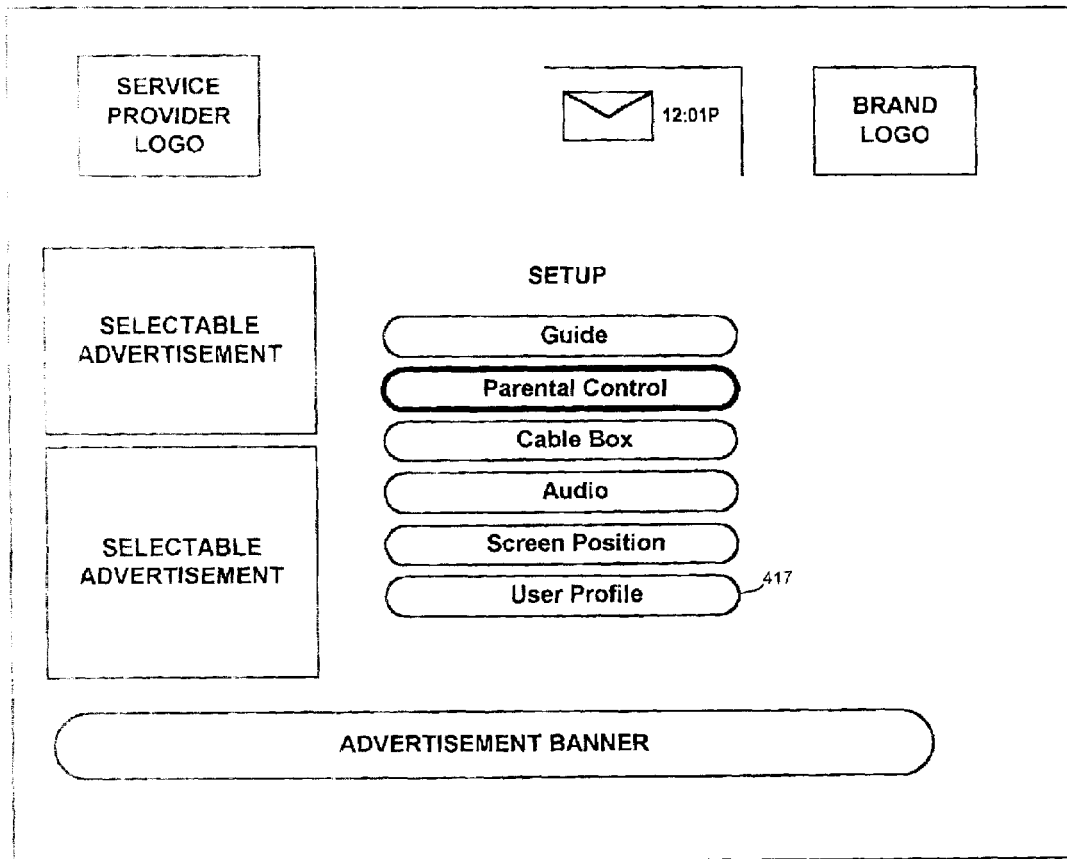


FIG. 11



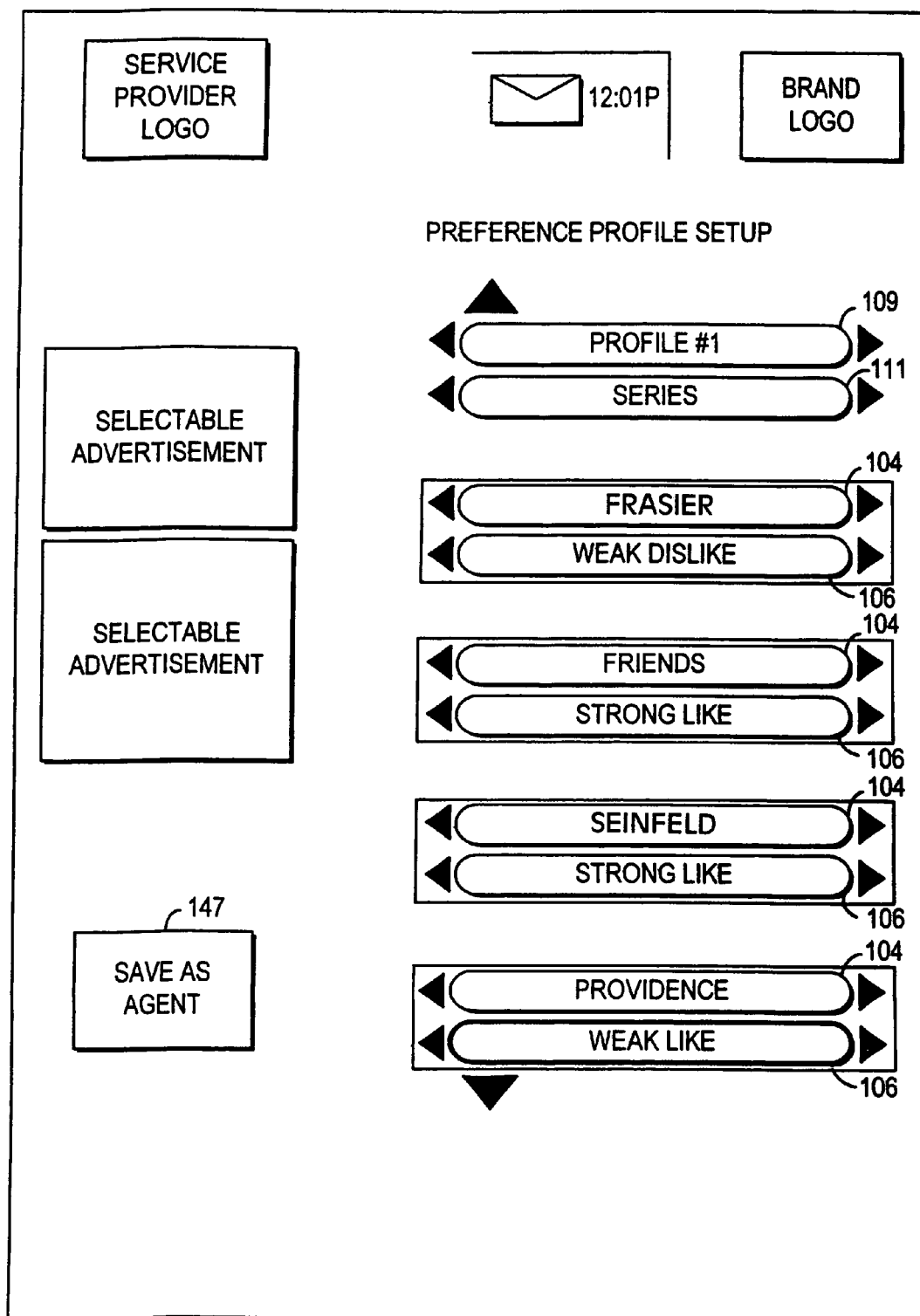
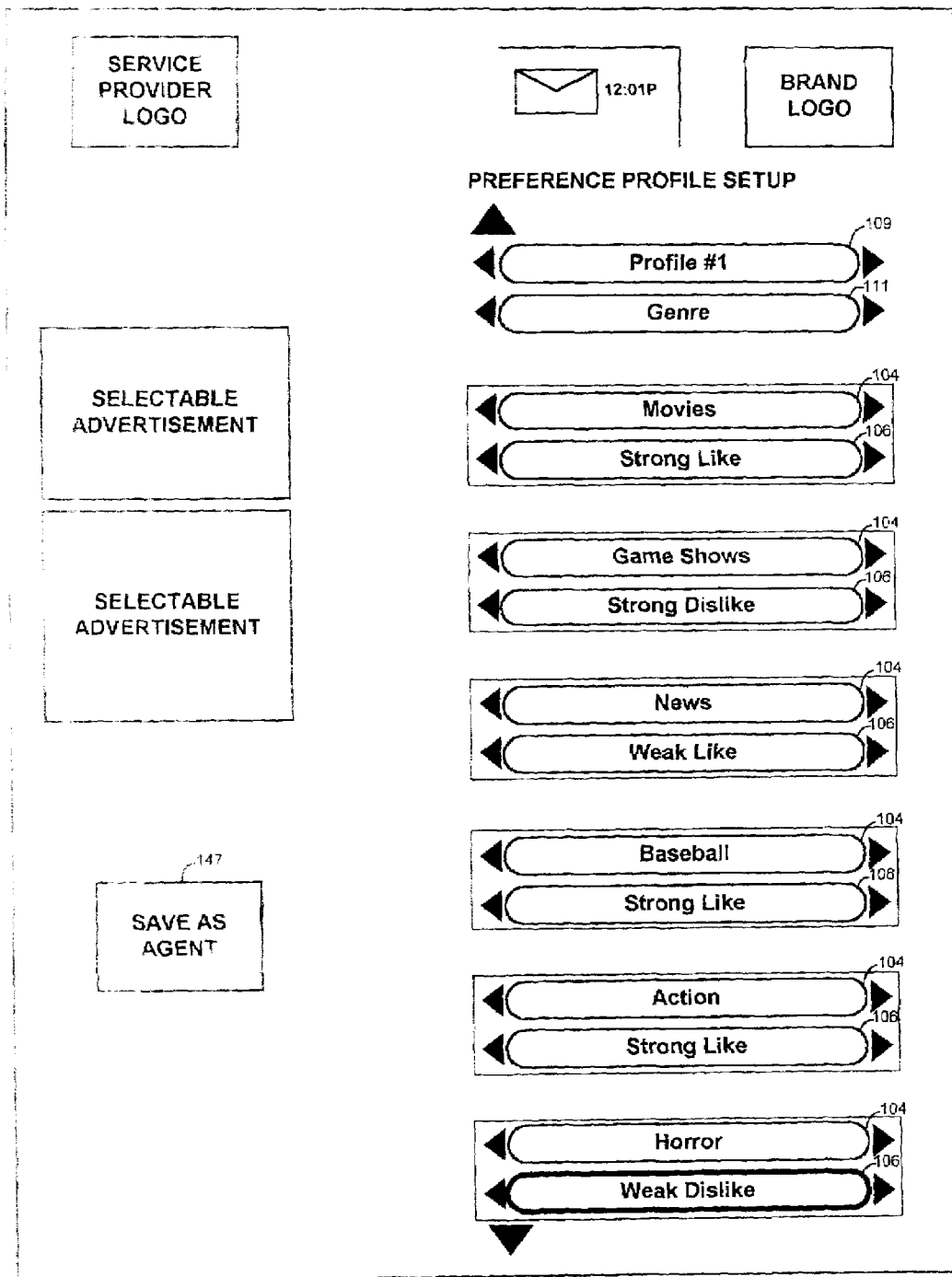


FIG. 13a



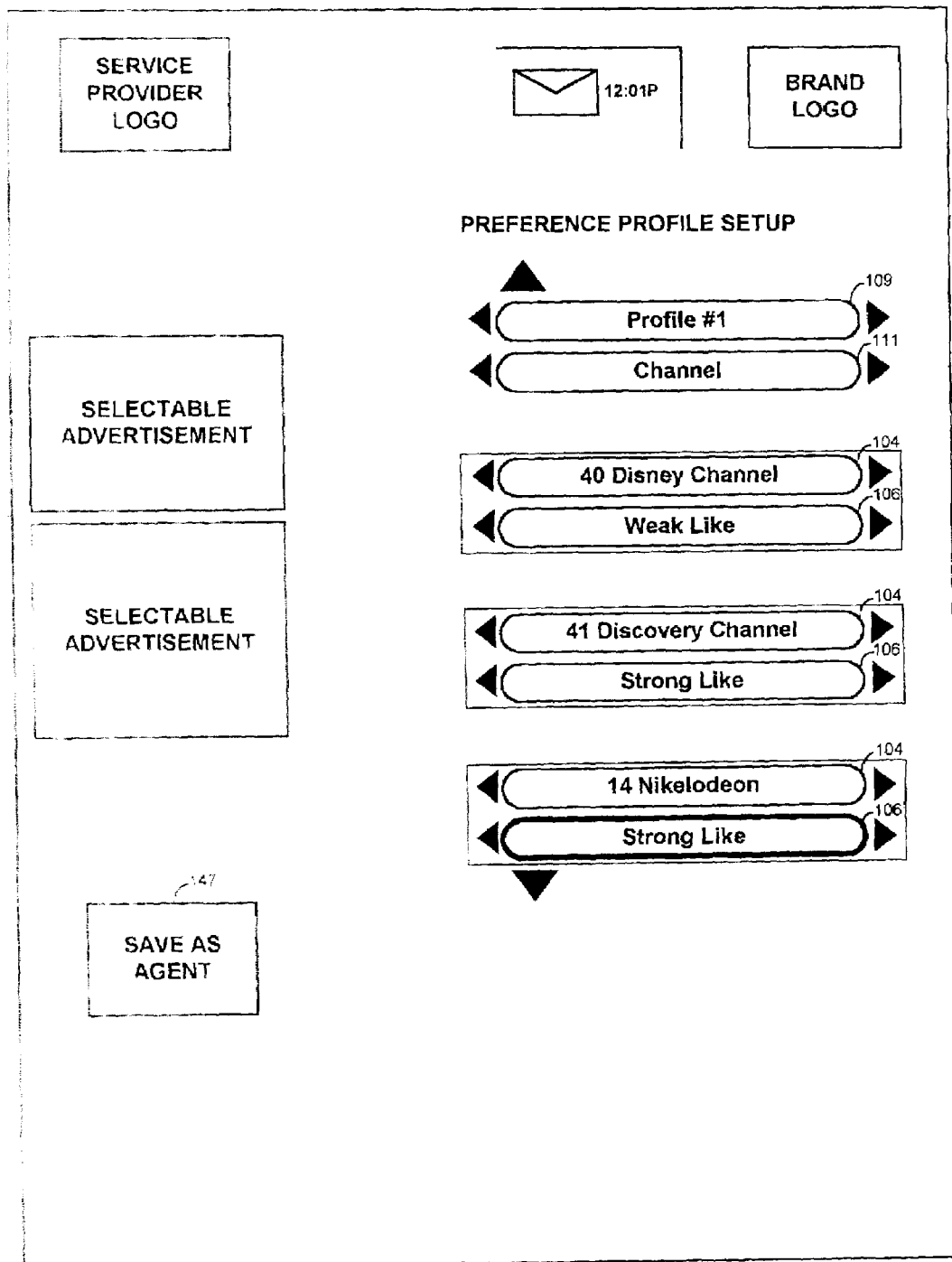


FIG. 13c



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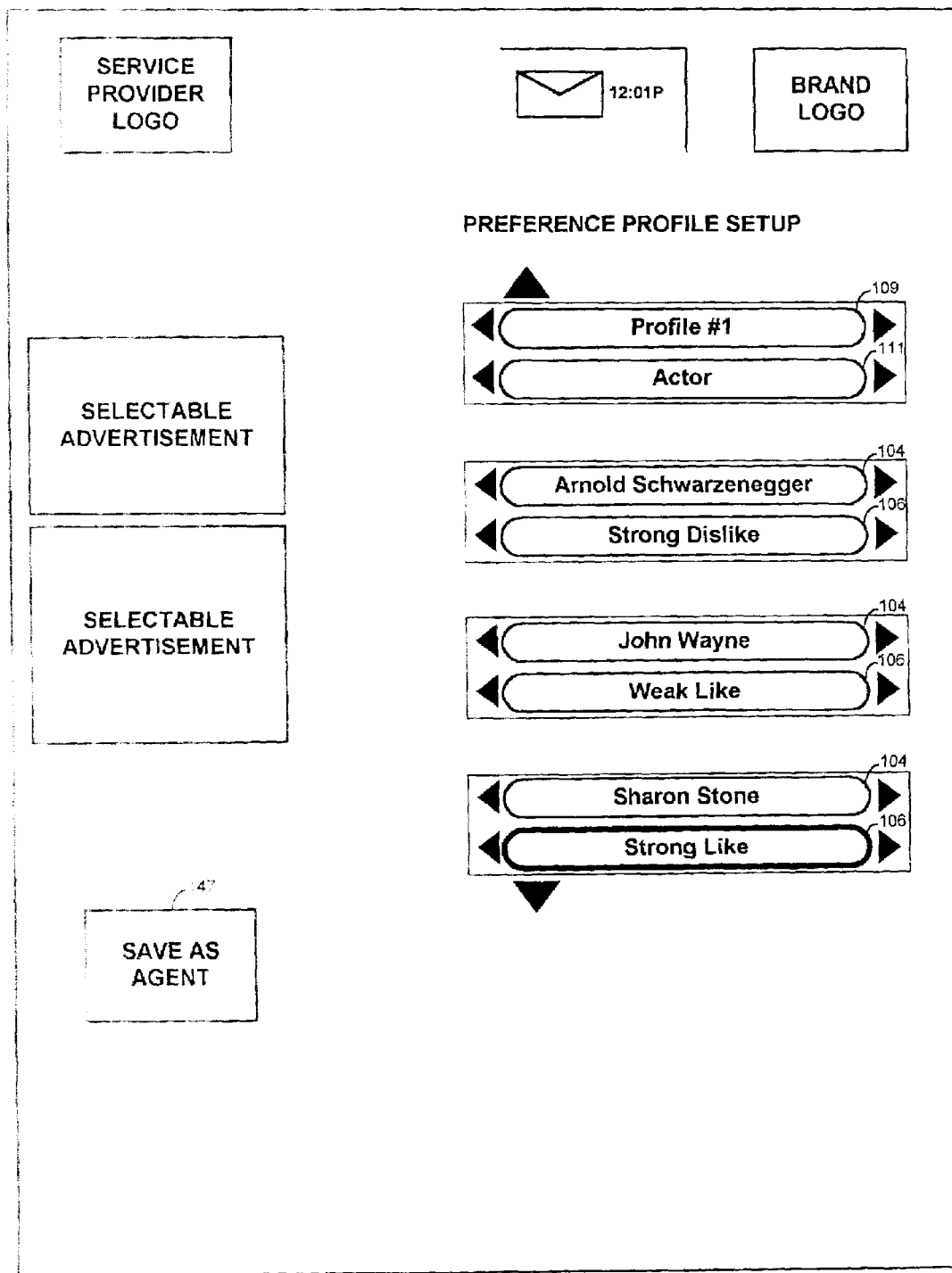


FIG. 13d

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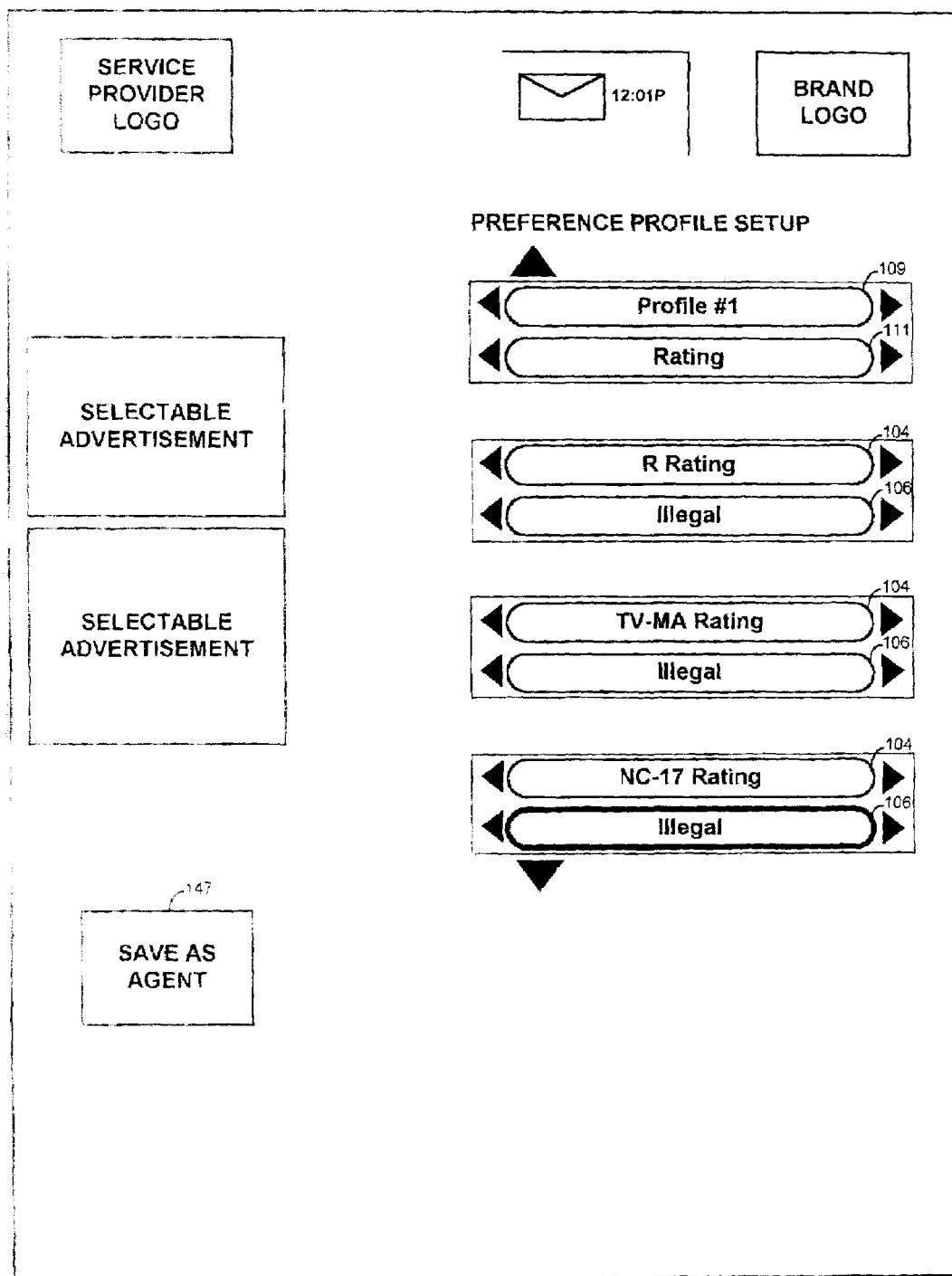


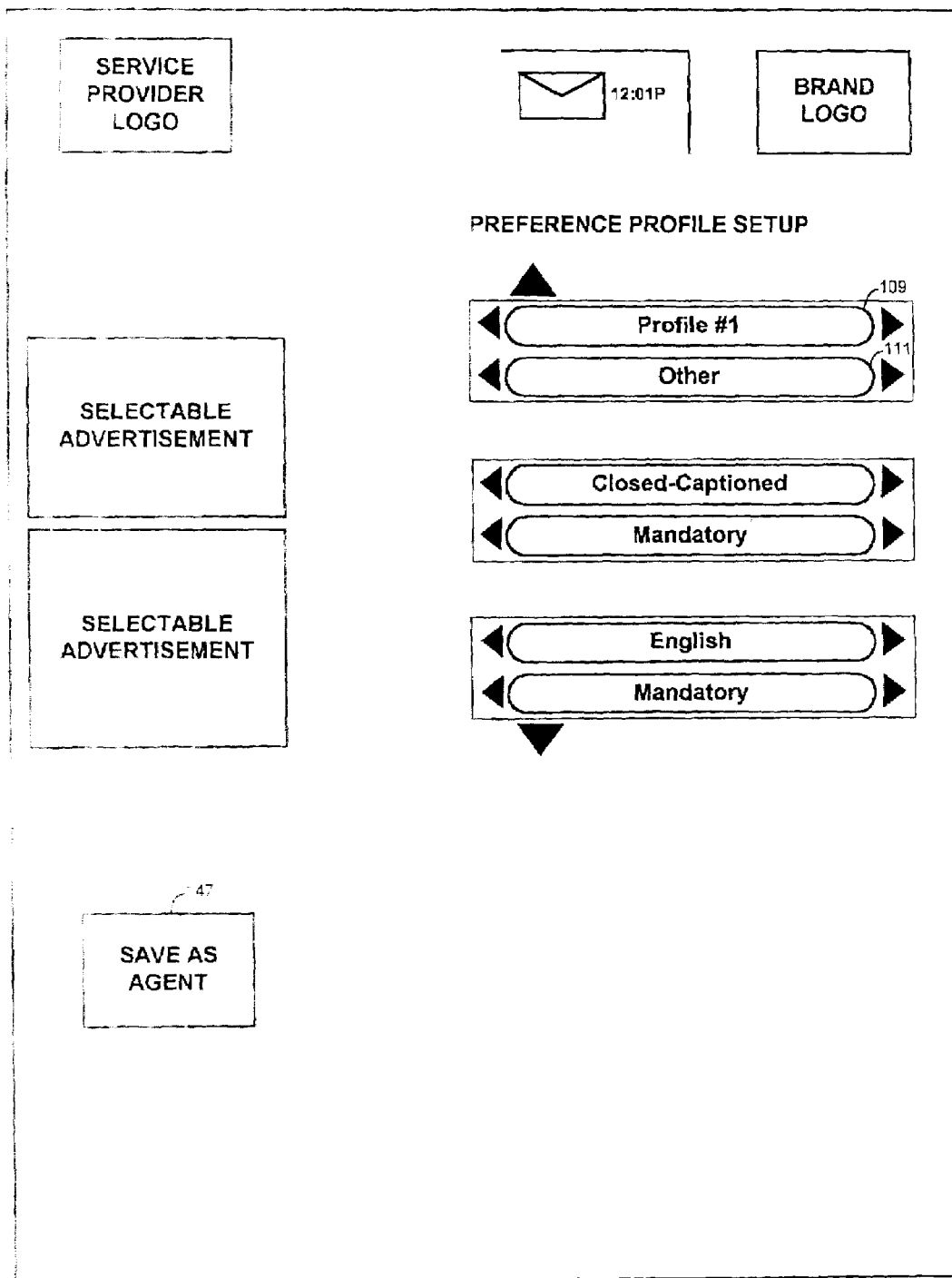
FIG. 13e

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**FIG. 13f**

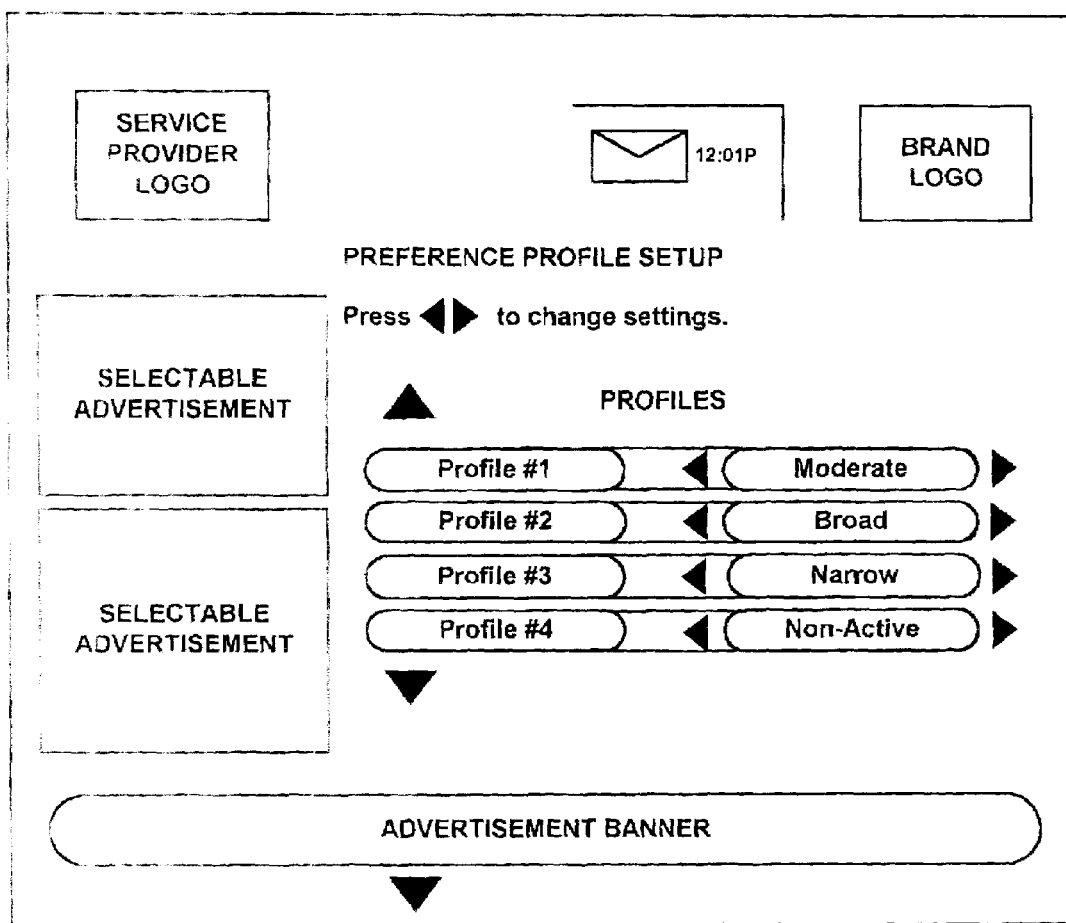


FIG. 14

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<u>NARROW SCOPE</u>	<u>MODERATE SCOPE</u>	<u>WIDE SCOPE</u>	<u>TITLE</u>	<u>GENRE</u>	<u>CC</u>	<u>RATING</u>	<u>MANDATORY+ NOT ILLEGAL</u>	<u>HIGHEST LEVEL</u>
Y	Y	Y	SEINFELD	COMEDY	Y	TV-PG	Y	SL
N	N	Y	THE SHINING	HORROR	Y	PG-13	Y	WD
N	N	N	DANTE'S PEAK	COMEDY	Y	R	N	SL
N	N	N	NIGHT AT THE OPERA	COMEDY	N	G	N	SL
N	Y	Y	ER	DRAMA	Y	TV-PG	Y	NEUTRAL
N	N	Y	TERMINATOR	ACTION HORROR	Y	PG-13	Y	SD
N	Y	Y	MY STEPMOTHER IS AN ALIEN	COMEDY HORROR	Y	PG-13	Y	SL+WD

**FIG. 15**

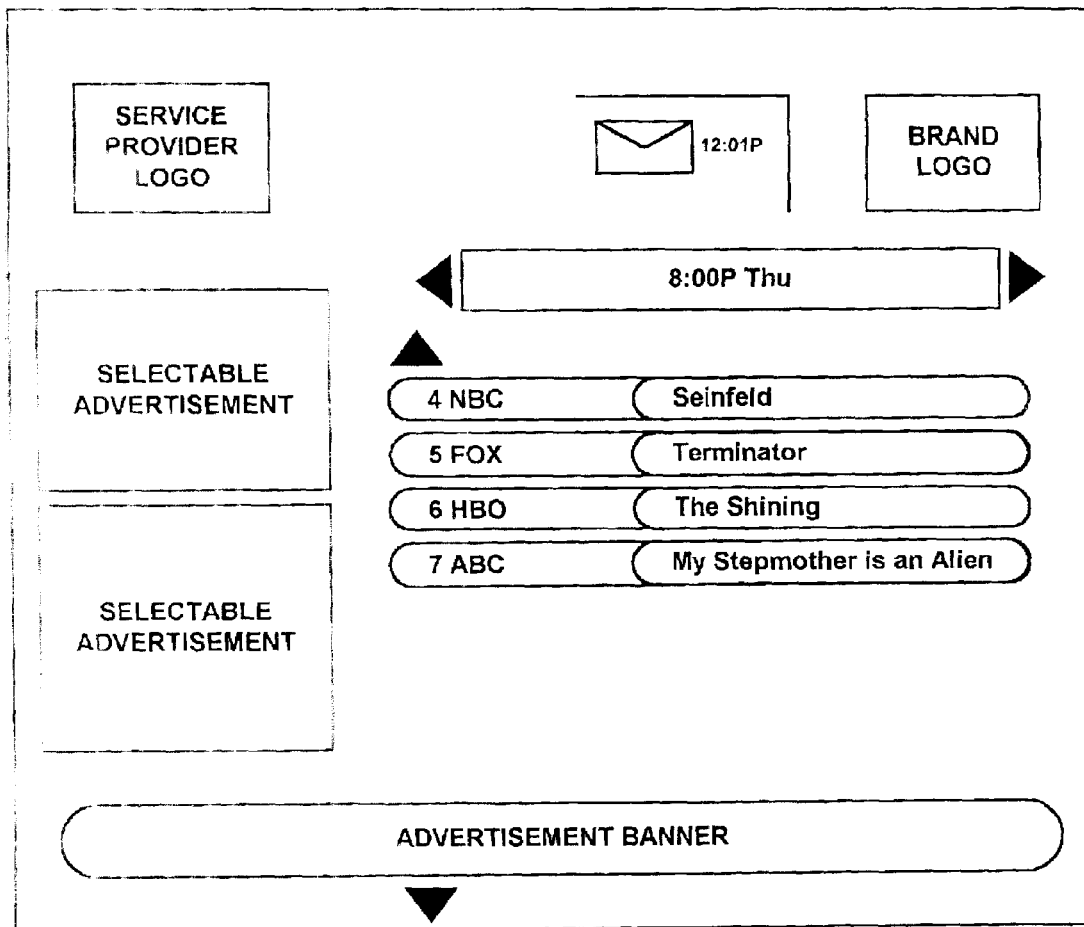


FIG. 16a

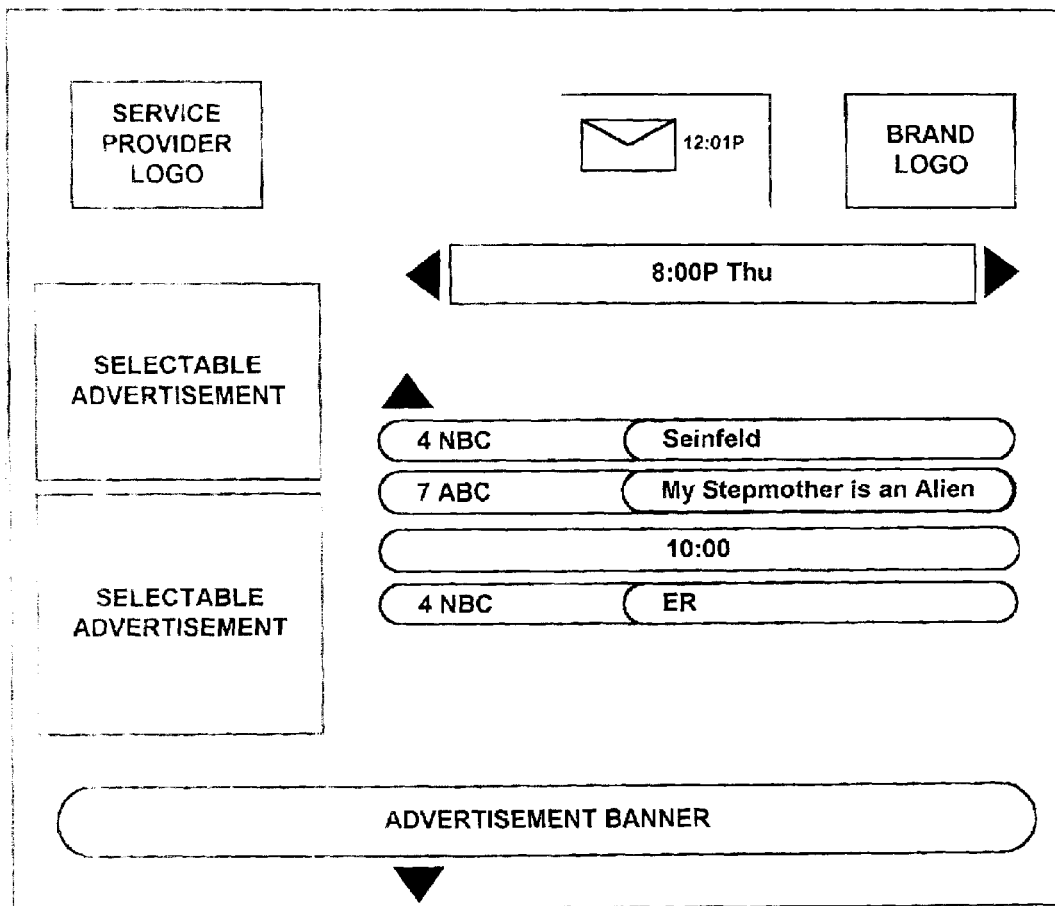


FIG. 16b

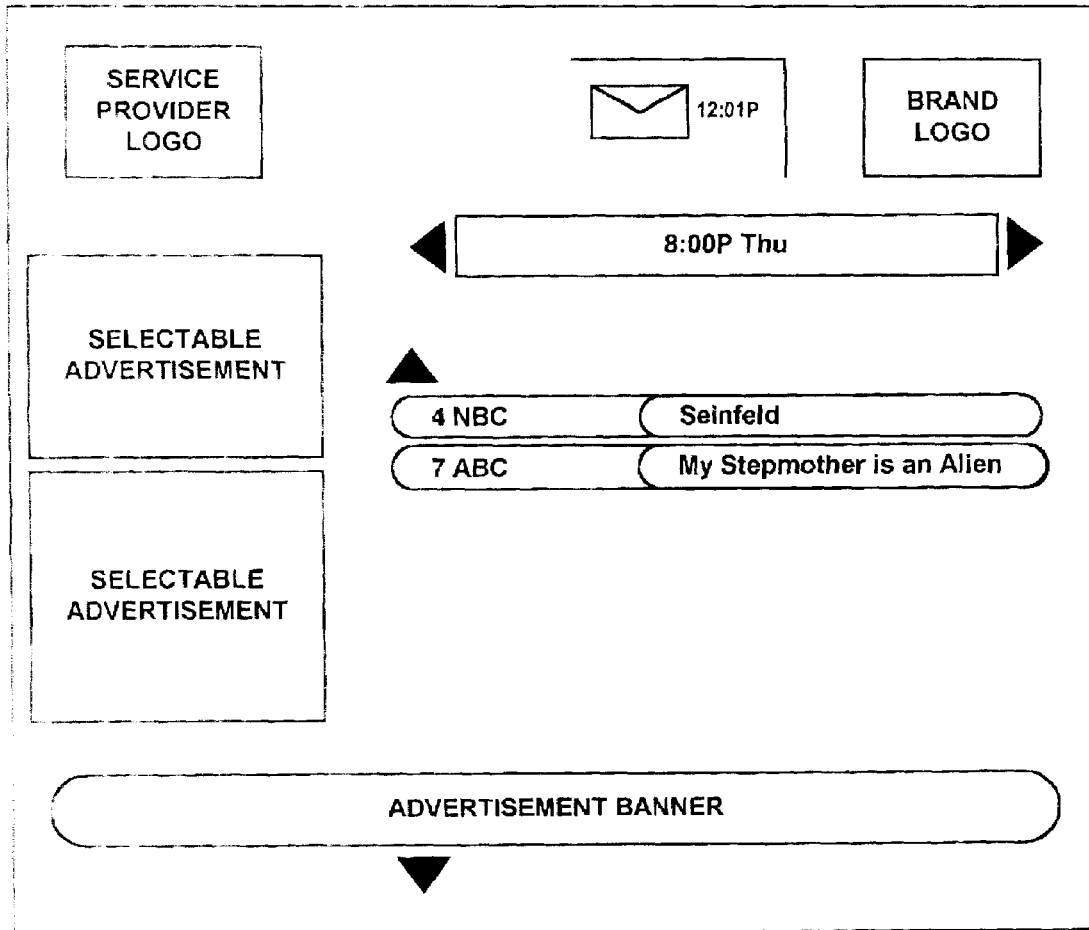


FIG. 16c

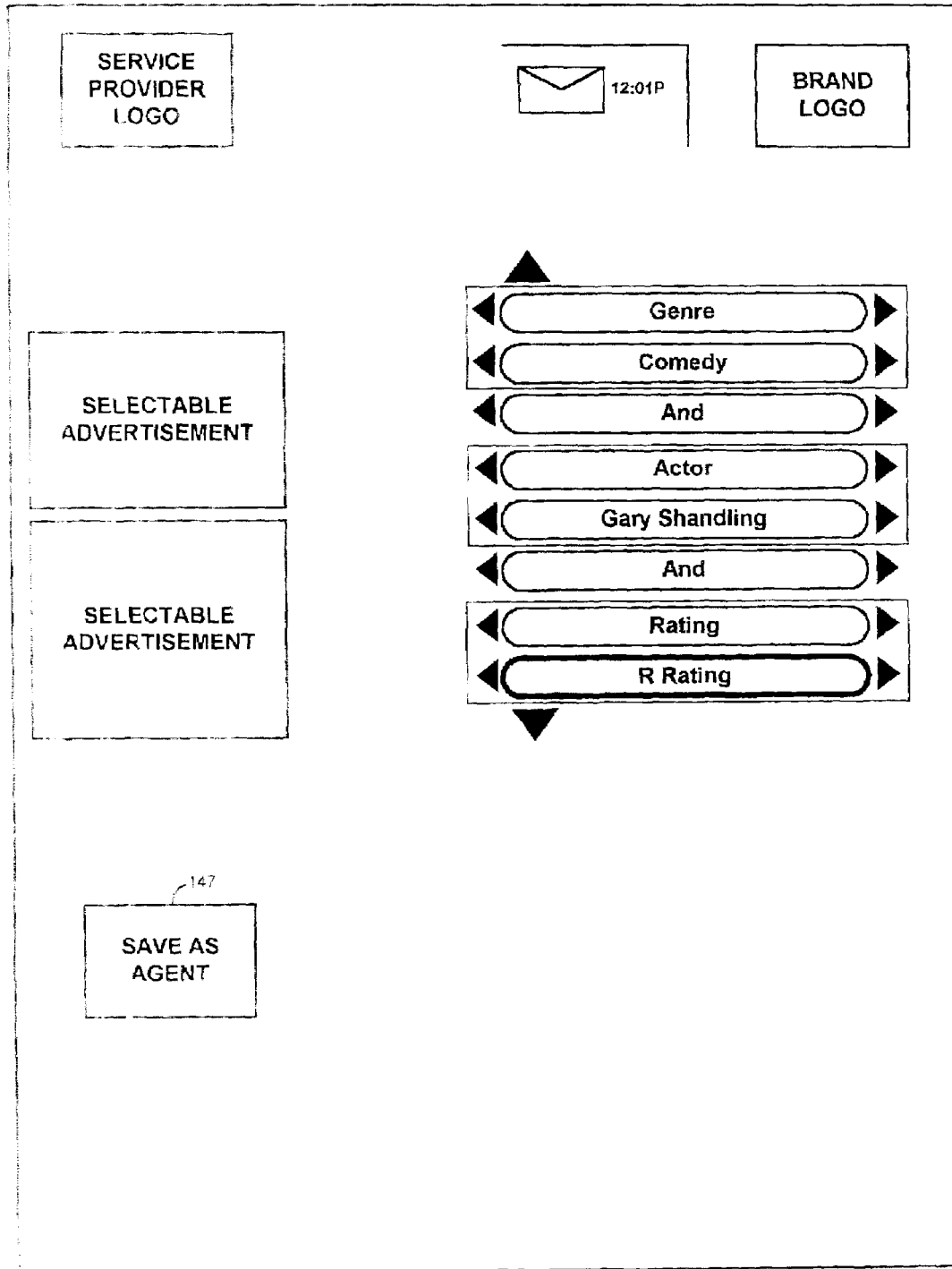


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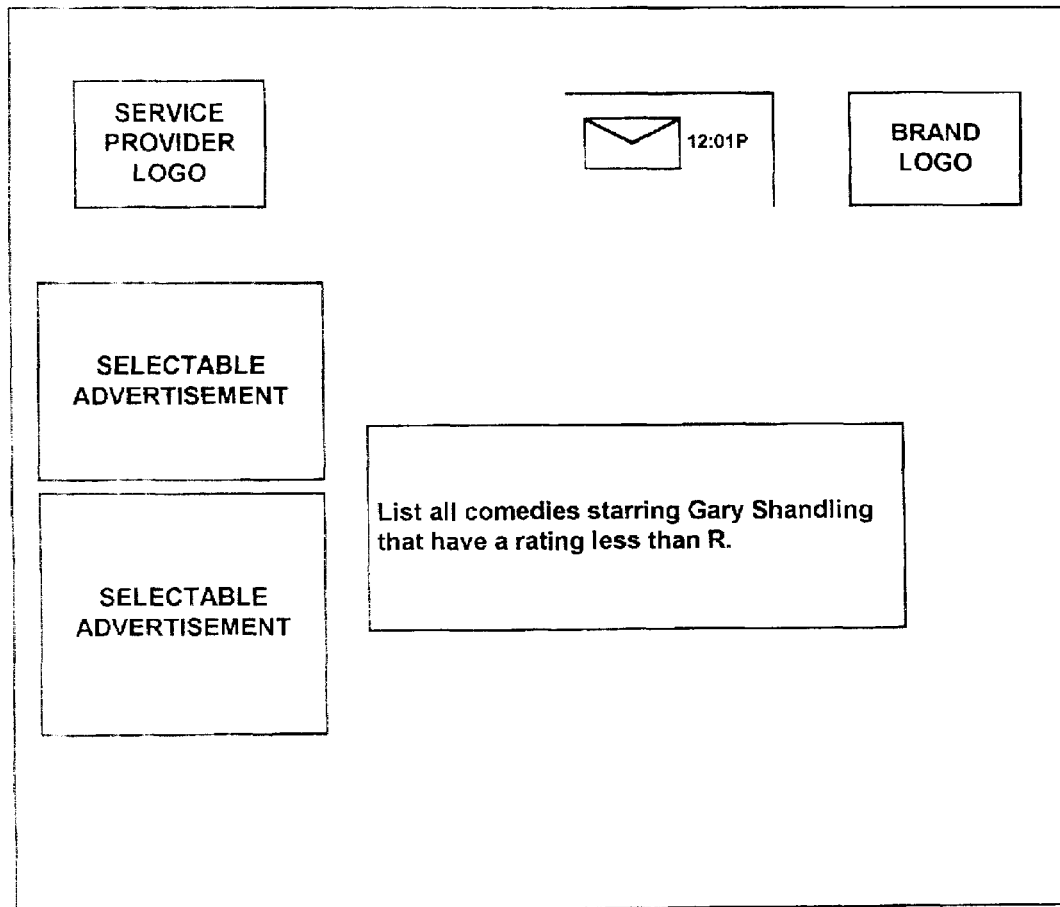
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**FIG. 17a**



**FIG. 17b**

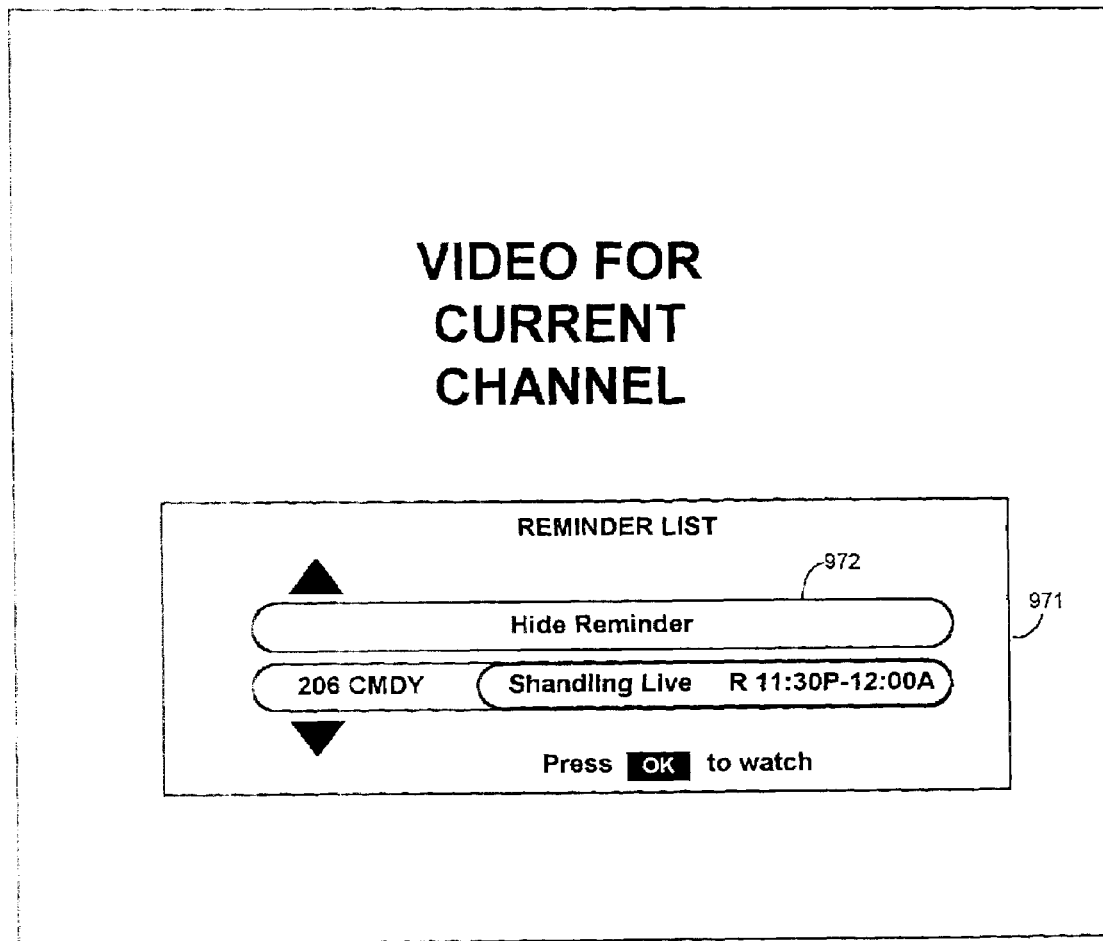


FIG. 18

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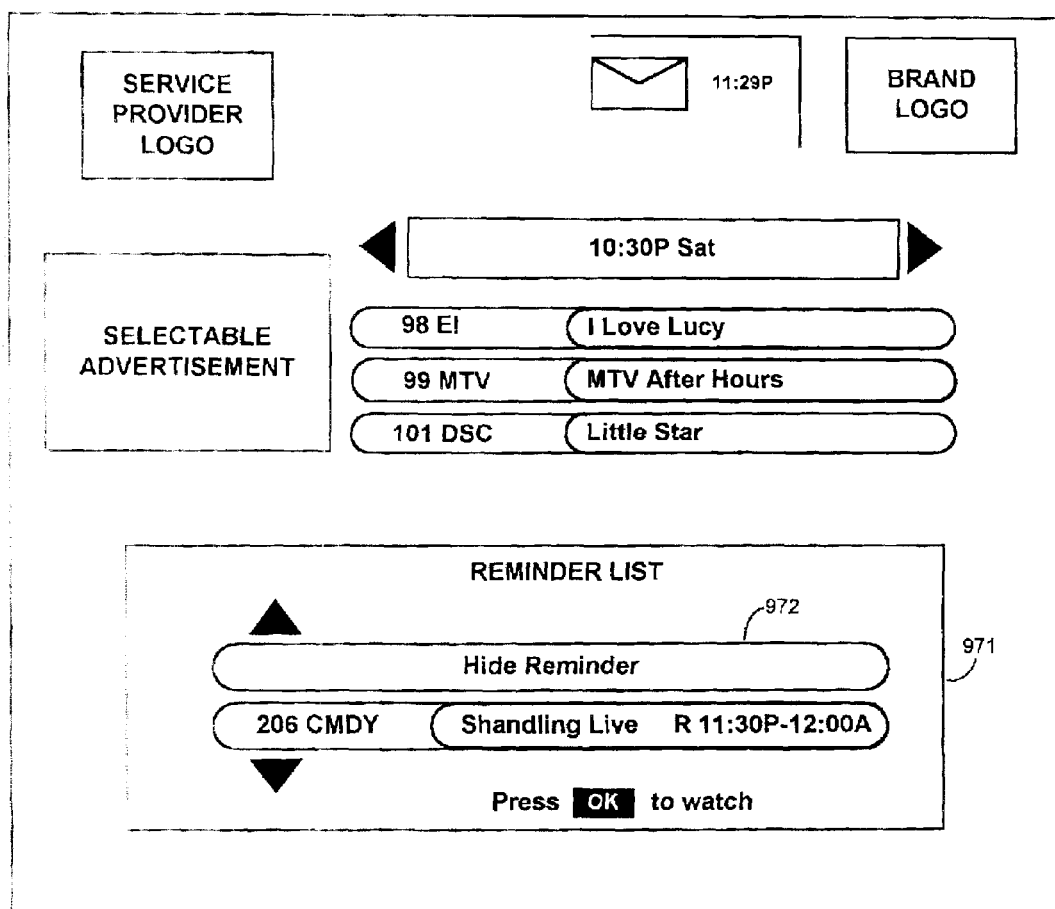
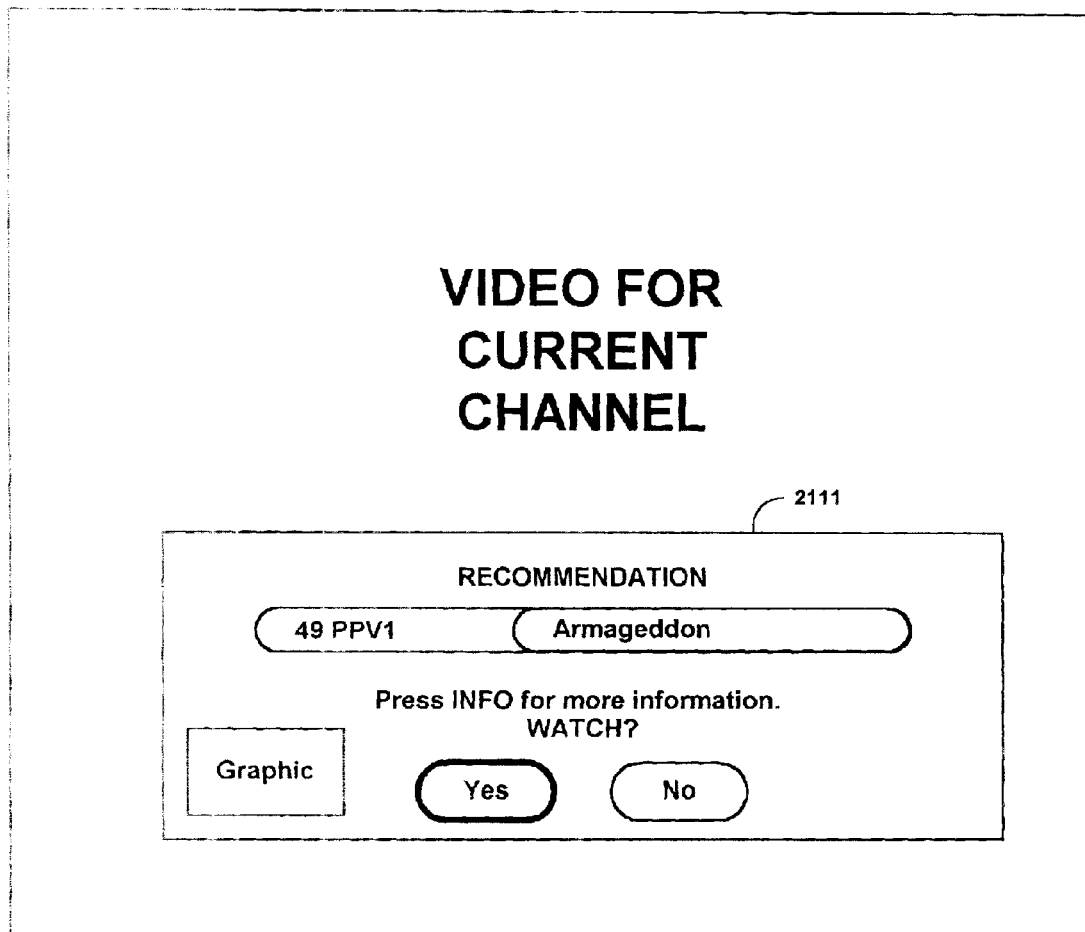


FIG. 19



**FIG. 20a**

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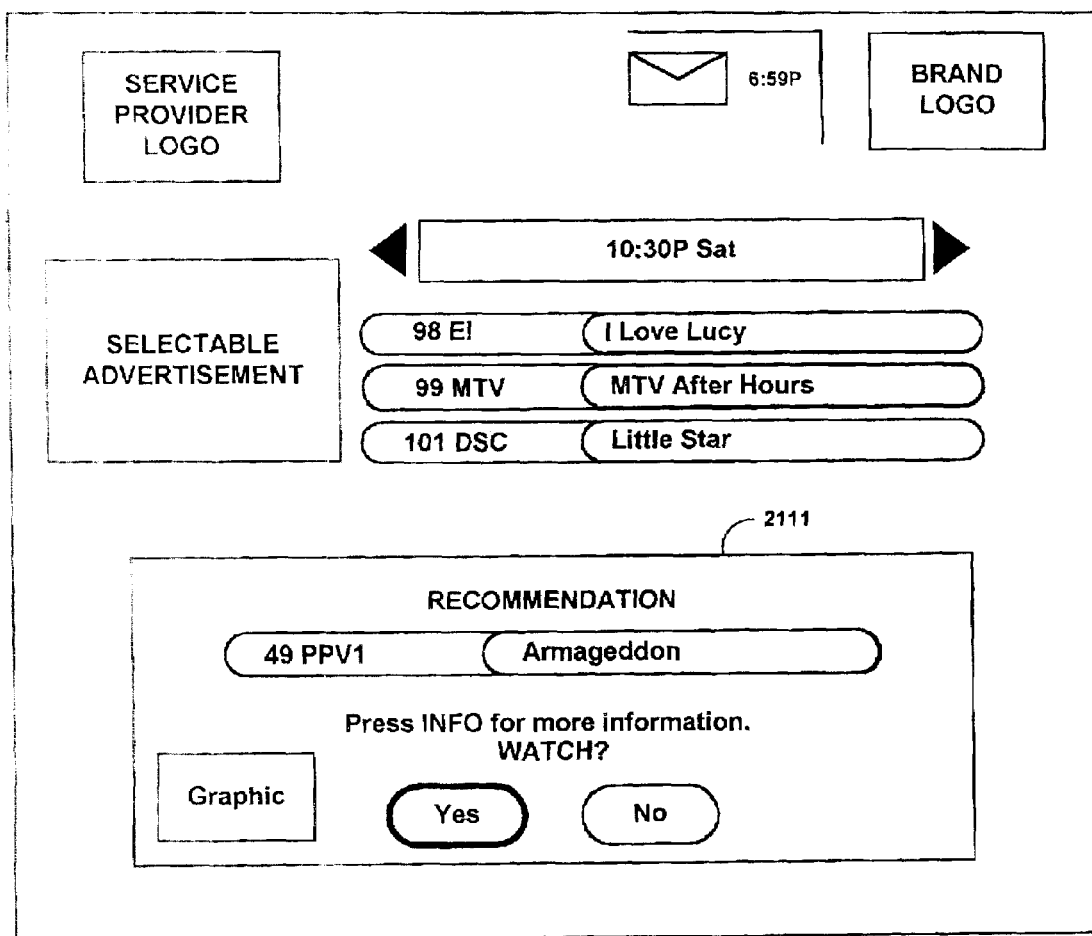


FIG. 20b

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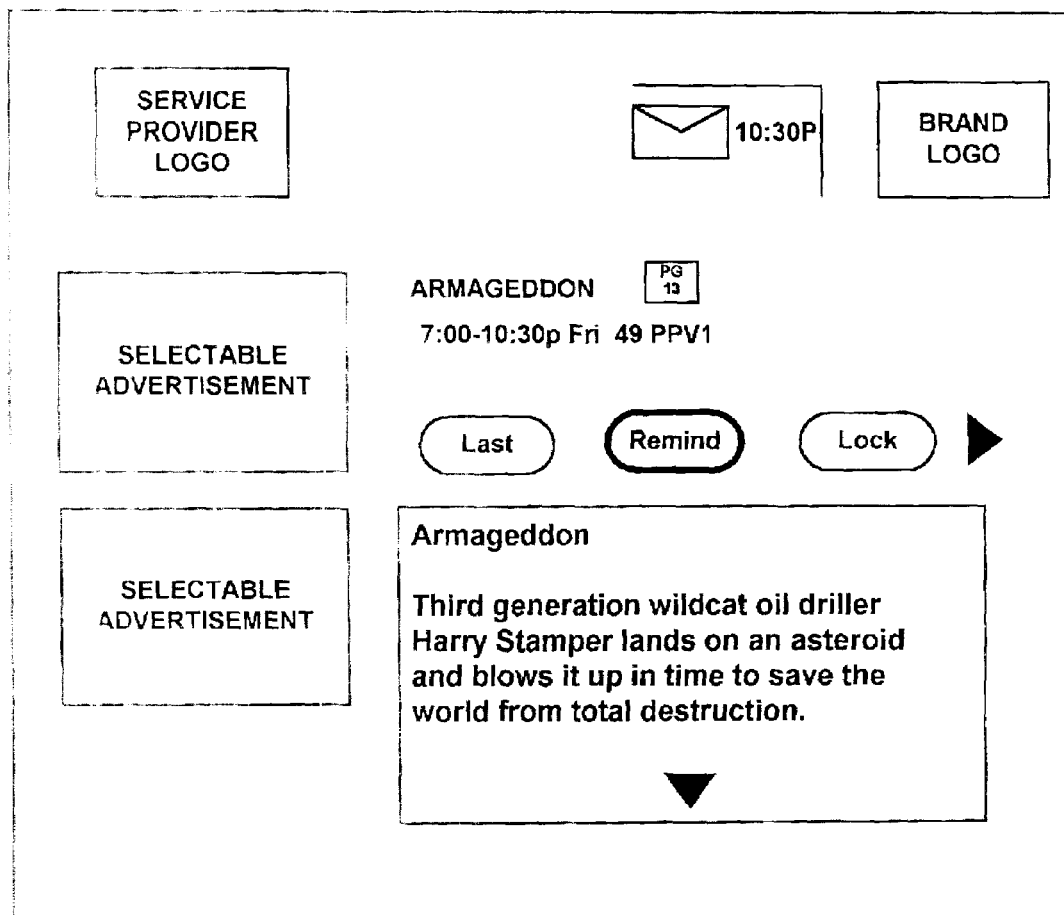


FIG. 20c

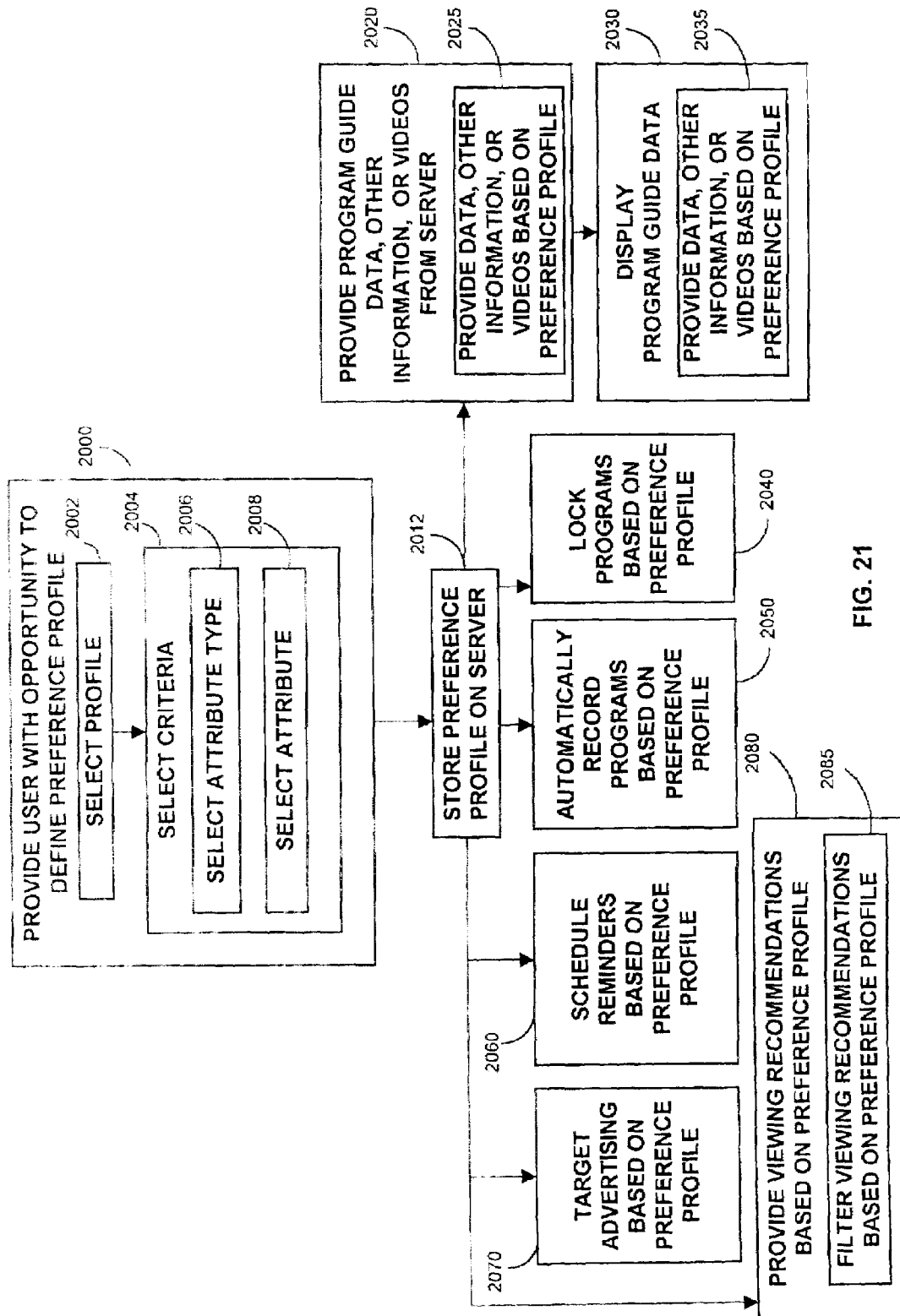


FIG. 21



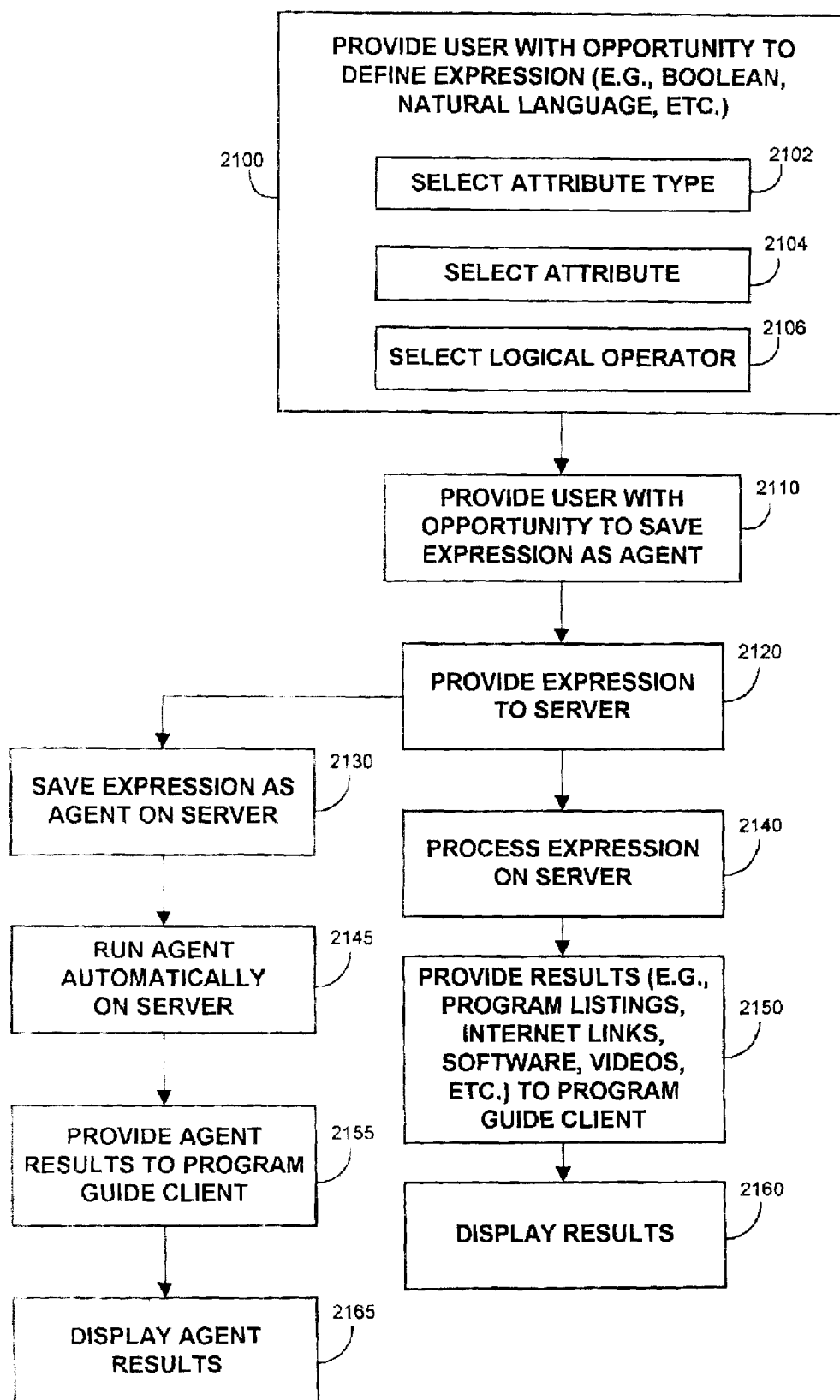


FIG. 22

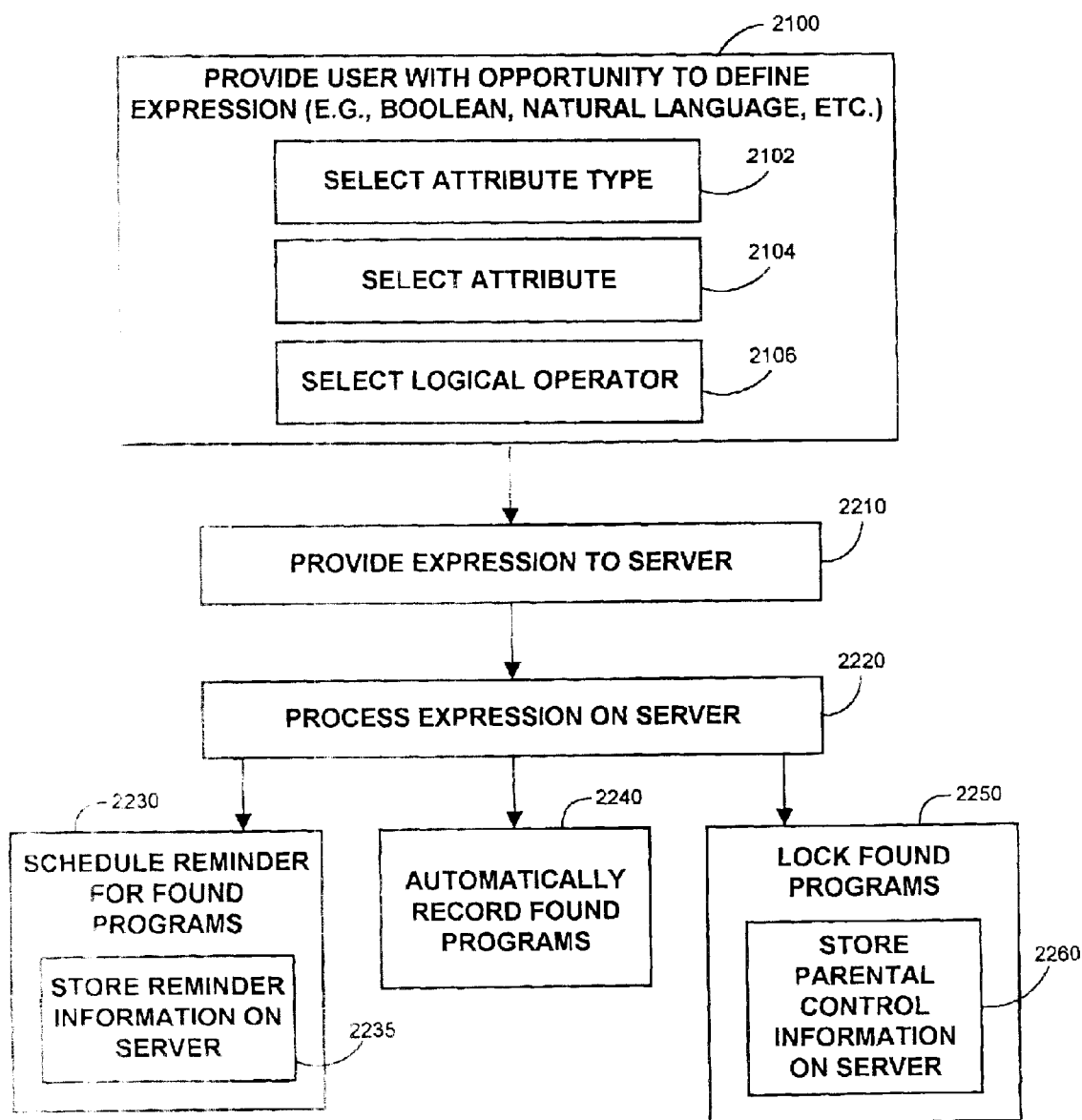


FIG. 23

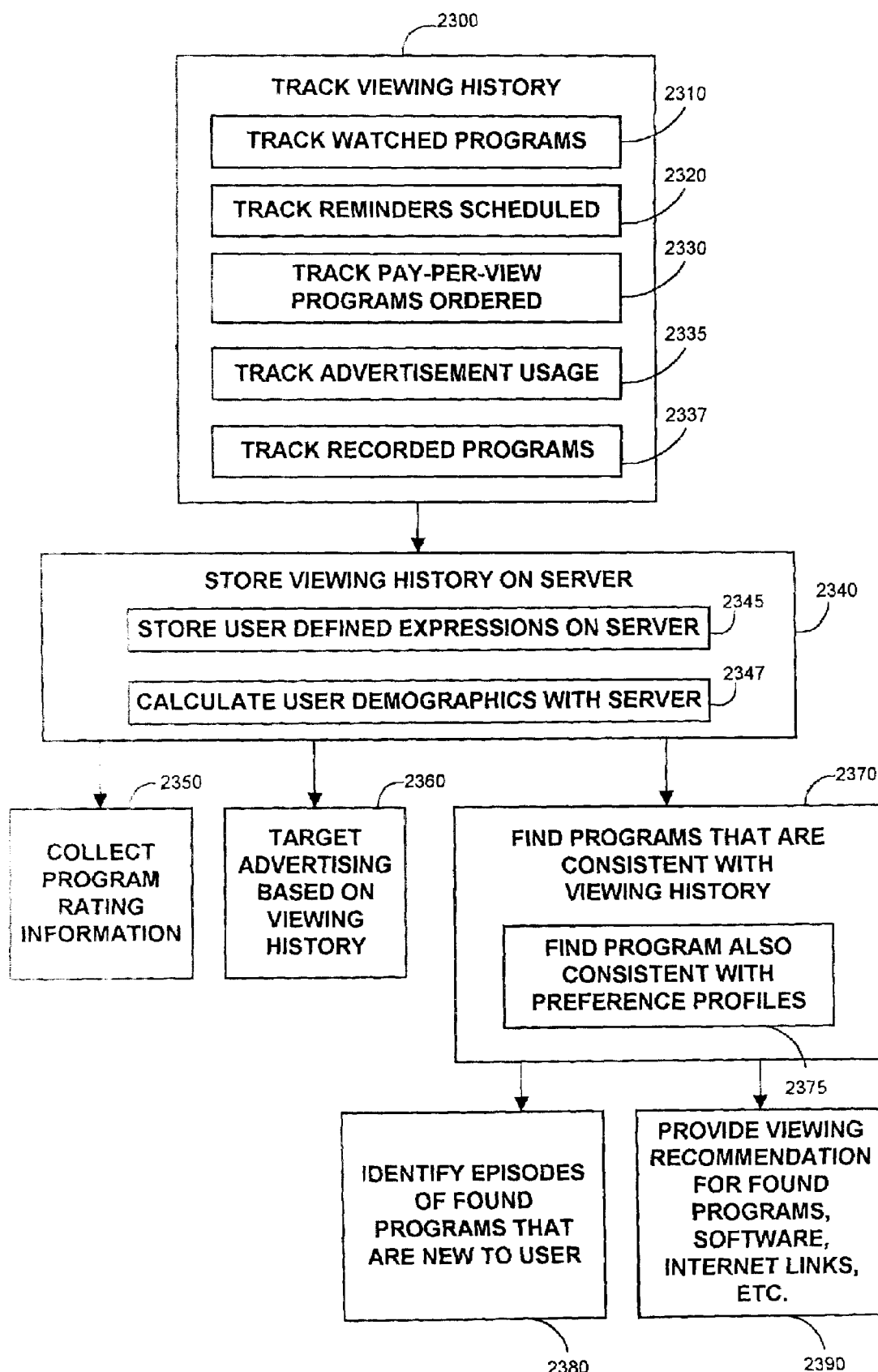


FIG. 24

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**CLIENT-SERVER ELECTRONIC PROGRAM GUIDE****CROSS REFERENCE TO RELATED APPLICATIONS**

This applications claims the benefit of U.S. Provisional Application No. 60/097,538, filed Aug. 21, 1998. This application is also a divisional application of U.S. patent application Ser. No. 09/374,043, filed Aug. 13, 1999, now U.S. Pat. No. 6,898,762, which is hereby incorporated by reference herein in its entirety.

**BACKGROUND OF THE INVENTION**

This invention relates to interactive television program guide systems, and more particularly, to interactive television program guide systems based on client-server arrangements.

Cable, satellite, and broadcast television systems provide viewers with a large number of television channels. Users have traditionally consulted printed television program schedules to determine the programs being broadcast at a particular time. More recently, interactive television program guides have been developed that allow television program information to be displayed on a user's television. Interactive television program which are typically implemented on set-top boxes, allow users to navigate through television program listings using a remote control. In a typical program guide, various groups of television program listings are displayed in predefined or user-selected categories. Program listings are typically displayed in a grid or table. On-line program guides have been proposed that require users to navigate the Internet to access program listings.

Client-server based program guides have been proposed in which program listings are stored on a server at a cable system headend. The server provides the program listings to program guide clients implemented on the set-top boxes of a number of users associated with each headend. As users navigate within a program listings grid, the server provides program listings to the client for display. Such systems, may be limited in their functionality due to their limited use of the resources of the server.

It is therefore an object of the present invention to provide an interactive television program guide system in which server resources are used to provide enhanced program guide features not provided by conventional set-top-box-based or client-server-based program guides.

**SUMMARY OF THE INVENTION**

This and other objects of the present invention are accomplished in accordance with the principles of the present invention by providing a client-server based interactive television program guide system in which a main facility (e.g., a satellite uplink facility or a facility that feeds such an uplink facility) provides data from one or more data sources to a number of television distribution facilities such as cable system headends, broadcast distribution facilities, satellite television distribution facilities, or other suitable distribution facilities. Some of the data sources may be located at different facilities and have their data provided to the main facility for localization and distribution or may provide their data to the television distribution facilities directly. The data provided to the television distribution facilities includes television programming data (e.g., titles, channels, content

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information, rating information, program identifiers, series identifiers, or any other information associated with television programming), and other program guide data for additional services other than television program listings (e.g., weather information, associated Internet web links, computer software, etc.). The main facility (and other sources) may provide the program guide data to the television distribution facilities via a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, an Internet link, a combination of such links, or any other suitable communications link.

Each television distribution facility has a program guide server. If desired, program guide servers may also be located at cable system network nodes or other facilities separate from the television distribution facilities or other distribution facilities. Each program guide server stores the program guide data provided by the main facility and provides access to the program guide data to program guide clients implemented on the user television equipment of a number of users associated with each television distribution facility. The program guide servers may also store user data, such as user preference profiles, parental control settings, record and reminder settings, viewing history, and other suitable data.

Providing program guide data with a program guide server and storing user data on the server may provide users with opportunities to perform various functions that may enhance the users' television viewing experience. Users may, for example, set user preference profiles or other favorites that are stored by the program guide server and used by the server to customize the program guide viewing experience for the user. The program guide server may filter program guide data based on the user preference profiles. Only data that is of interest to the user may then be provided to the guide client, thereby tending to minimize the memory requirements of the user's television equipment and lessen the bandwidth requirements of the local distribution network.

A client-server based architecture may also provide users with the ability to search and sort through program related information in ways that might not otherwise be possible due to the limited processing and storage capabilities of the users' television equipment. If desired, users may be provided with access to program guide data without requiring them to navigate the Internet. Users may, for example, define sophisticated boolean or natural language expressions having one or more criteria for searching through and sorting program guide data, scheduling reminders, automatically recording programs and parentally controlling programs. The criteria may also be derived by the program guide server or program guide client from user profiles or by monitoring usage of the program guide. The criteria may be stored on the program guide server. Users may be provided with an opportunity to access, modify, or delete the expressions.

The program guide server may also track the users' viewing histories to provide a user-customized program guide experience. Programs or series of episodes users have watched may be identified and used by the program guide, for example, to inform users when there are showings in the series that the users have not watched. The program guide may, for example, provide viewing recommendations based on a user's viewing history and, if appropriate, on user preference profiles or other criteria stored by the program guide server. The program guide may also target advertisements toward users based on the viewing histories or criteria, and may track the viewing of programs to generate viewership ratings.

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Further features of the invention, its nature and various advantages will be more apparent from the accompanying drawings and the following detailed description of the preferred embodiments.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic block diagram of an illustrative system in accordance with the present invention.

FIGS. 2a, 2b, and 2c show illustrative arrangements for the interactive program guide equipment of FIG. 1 in accordance with the principles of the present invention.

FIG. 3 is an illustrative schematic block diagram of a user television equipment of FIGS. 2a and 2b in accordance with the principles of the present invention.

FIG. 4 is a generalized schematic block diagram of portions of the illustrative user television equipment of FIG. 3 in accordance with the principles of the present invention.

FIG. 5 is an illustrative main menu screen in accordance with the principles of the present invention.

FIG. 6 is an illustrative program listings by time screen in accordance with the principles of the present invention.

FIG. 7 is an illustrative program listings by channel screen in accordance with the principles of the present invention.

FIGS. 8a-8c are illustrative program listings by category screens in accordance with the principles of the present invention.

FIG. 9a is an illustrative boolean type criteria screen in accordance with the principles of the present invention.

FIG. 9b is an illustrative natural language criteria screen in accordance with the principles of the present invention.

FIG. 10 shows an illustrative agents screen in accordance with the principles of the present invention.

FIG. 11 is an illustrative program listings screen in which program listings found according to the illustrative expressions of FIGS. 9a and 9b are displayed in accordance with the principles of the present invention.

FIG. 12 shows an illustrative setup screen in accordance with the principles of the present invention.

FIGS. 13a-13f show illustrative preference profile screens in accordance with the principles of the present invention.

FIG. 14 shows an illustrative profile activation screen in accordance with the principles of the present invention.

FIG. 15 shows a table containing an illustrative list of programs that might be available to a user after defining the preference profiles of FIGS. 13a-13f in accordance with the principles of the present invention.

FIGS. 16a-16c are illustrative program listings screens that may be displayed according to the preference profiles of FIGS. 13a-13f in accordance with the principles of the present invention.

FIGS. 17a and 17b show illustrative criteria screens in accordance with the principles of the present invention.

FIGS. 18 and 19 show illustrative program reminder lists generated according to the expressions of FIGS. 17a and 17b in accordance with the principles of the present invention.

FIGS. 20a and 20b show an illustrative viewer recommendation overlay, in accordance with the principles of the present invention.

FIG. 20c shows an illustrative additional information screen in accordance with the principles of the present invention.

FIG. 21 is a flowchart of illustrative steps involved in providing users with an opportunity to define preference

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profiles and access program guide data according to the preference profiles in accordance with the principles of the present invention.

FIG. 22 is a flowchart of illustrative steps involved in providing users with an opportunity to search program guide data, other information, and videos in accordance with the principles of the present invention.

FIG. 23 is a flowchart of illustrative steps involved in processing and using expressions in accordance with the principles of the present invention.

FIG. 24 is a flowchart of illustrative steps involved in tracking and using viewing histories in accordance with the principles of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An illustrative system 10 in accordance with the present invention is shown in FIG. 1. Main facility 12 may provide program guide data from data source 14 to interactive television program guide equipment 17 via communications link 18. There may be multiple program guide data sources in main facility 12 but only one has been shown to avoid over-complicating the drawing. If desired, program guide data sources may be located at facilities separate from main facility 12 such as at local information services 15, and may have their data provided to main facility 12 for localization and distribution. Data sources 14 may be any suitable computer or computer-based system for obtaining data (e.g., manually from an operator, electronically via a computer network or other connection, or via storage media) and placing the data into electronic form for distribution by main facility 12. Link 18 may be a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, an Internet link, a combination of such links, or any other suitable communications link. Video signals may also be transmitted over link 18 if desired.

Local information service 15 may be any suitable facility for obtaining data particular to a localized region and providing the data to main facility 12 or interactive television program guide equipment 17 over communications links 41. Local information service 15 may be, for example, a local weather station that measures weather data, a local newspaper that obtains local high school and college sporting information, or any other suitable provider of information. Local information service 15 may be a local business with a computer for providing main facility 12 with, for example, local ski reports, fishing conditions, menus, etc., or any other suitable provider of information. Link 41 may be a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, an Internet link, a combination of such links, or any other suitable communications link. Additional data sources 14 may be located at other facilities for providing main facility 12 with non-localized data (e.g., non-localized program guide data) over link 41.

The program guide data transmitted by main facility 12 to interactive television program guide equipment 17 may include television programming data (e.g., program identifiers, times, channels, titles, descriptions, series identifiers, etc.) and other data for services other than television program listings (e.g., help text, pay-per-view information, weather information, sports information, music channel information, associated Internet web links, associated software, etc.). There are preferably numerous pieces or installations of interactive television program guide equipment 17, although only one is shown in FIG. 1 to avoid over-complicating the drawing.

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Program guide data may be transmitted by main facility 12 to interactive television program guide equipment 17 using any suitable approach. Data files may, for example, be encapsulated as objects and transmitted using a suitable Internet based addressing scheme and protocol stack (e.g., a stack which uses the user datagram protocol (UDP) and Internet protocol (IP)). Systems in which program guide data is transmitted from a main facility to television distribution facilities are described, for example, in Gollahon et al. U.S. patent application Ser. No. 09/332,624, filed Jun. 11, 1999, which is hereby incorporated by reference herein in its entirety.

A client-server based interactive television program guide is implemented on interactive television program guide equipment 17. Three illustrative arrangements for interactive television program guide equipment 17 are shown in FIGS. 2a-2c. FIG. 2a shows an illustrative arrangement for interactive television program guide equipment 17 in which a program guide server obtains program guide data directly from main facility 12. FIG. 2b shows an illustrative arrangement for interactive television program guide equipment 17 in which a program guide server obtains program guide data from main facility 12 or some other facility (e.g., local information service 15) via the Internet. In either of these approaches, users may be provided with opportunities to access program guide data without having to navigate the Internet, if desired. As shown in FIGS. 2a and 2b, interactive program guide television equipment 17 may include television distribution facility 16 and user television equipment 22.

Television distribution facility 16 may have program guide distribution equipment 21 and program guide server 25. Distribution equipment 21 is equipment suitable for providing program guide data from program guide server 25 to user television equipment 22 over communications path 20. Distribution equipment 21 may include, for example, suitable transmission hardware for distributing program guide data on a television channel sideband, in the vertical blanking interval of a television channel, using an in-band digital signal, using an out-of-band digital signal, over a dedicated computer network or Internet link, or by any other data transmission technique suitable for the type of communications path 20. Analog or digital video signals (e.g., television programs) may also be distributed by distribution equipment 21 to user television equipment 22 over communications paths 20 on multiple analog or digital television channels. Alternatively, videos may be distributed to user television equipment 22 from some other suitable distribution facility, such as a cable system headend, a broadcast distribution facility, a satellite television distribution facility, or any other suitable type of television distribution facility.

Communications paths 20 may be any communications paths suitable for distributing program guide data. Communications paths 20 may include, for example, a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, an Internet link, a data-over-cable service interface specification (DOCSIS) link, a combination of such links, or any other suitable communications link. Communications paths 20 preferably have sufficient bandwidth to allow television distribution facility 16 or another distribution facility to distribute television programming to user television equipment 22. There are typically multiple pieces of user television equipment 22 and multiple associated communications paths 20, although only one piece of user television equipment 22 and communications path 20 are shown in FIGS. 2a and 2b to avoid over-complicating the

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drawings. If desired, television programming and program guide data may be provided over separate communications paths.

Program guide server 25 may be based on any suitable combination of server software and hardware. Program guide server 25 may retrieve program guide data or video files from storage device 56 in response to program guide data or video requests generated by an interactive television program guide client implemented on user television equipment 22. As shown in FIGS. 2a and 2b, program guide server 25 may include processing circuitry 54 and storage device 56. Processing circuitry 54 may include any suitable processor, such as a microprocessor or group of microprocessors, and other processing circuitry such as caching circuitry, video decoding circuitry, direct memory access (DMA) circuitry, input/output (I/O) circuitry, etc.

Storage device 56 may be a memory or other storage device, such as random access memory (RAM), flash memory, a hard disk drive, etc., that is suitable for storing the program guide data transmitted to television distribution facility 16 by main facility 12. User data, such as user preference profiles, preferences, parental control settings, record and reminder settings, viewing histories, and other suitable data may also be stored on storage device 56 by program guide server 25. Program guide data and user data may be stored on storage device 56 in any suitable format (e.g., a Structured Query Language (SQL) database). If desired, storage 56 may also store video files for playing back on demand.

Processing circuitry 54 may process requests for program guide data by searching the program guide data stored on storage device 56 for the requested data, retrieving the data, and providing the retrieved data to distribution equipment 21 for distribution to user television equipment 22. Processing circuitry 54 may also process storage requests generated by the program guide client that direct program guide server 25 to store user data. Alternatively, program guide server 25 may distribute program guide data to and receive user data from user television equipment 22 directly. If communications paths 20 include an Internet link, DOCSIS link, or other high speed computer network link (e.g., 10BaseT, 100BaseT, 10BaseF, T1, T3, etc.), for example, processing circuitry 54 may include circuitry suitable for transmitting program guide and user data and receiving program guide data and storage requests over such a link.

Program guide server 25 may communicate with user television equipment 22 using any suitable communications protocol. For example, program guide server 25 may use a communications protocol stack that includes transmission control protocol (TCP) and Internet protocol (IP) layers, sequenced packet exchange (SPX) and internetwork packet exchange (IPX) layers, Appletalk transaction protocol (ATP) and datagram delivery protocol (DDP) layers, DOCSIS, or any other suitable protocol or combination of protocols. User television equipment 22 may also include suitable hardware for communicating with program guide server 25 over communications paths 20 (e.g., Ethernet cards, modems (digital, analog, or cable), etc.)

The program guide client on user television equipment 22 may retrieve program guide data from and store user data on program guide server 25 using any suitable client-server based approach. The program guide may, for example, pass SQL requests as messages to program guide server 25. In another suitable approach, the program guide may invoke remote procedures that reside on program guide server 25 using one or more remote procedure calls. Program guide server 25 may execute SQL statements for such invoked

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remote procedures. In still another suitable approach, client objects executed by the program guide may communicate with server objects executed by program guide server 25 using, for example, an object request broker (ORB). This may involve using, for example, Microsoft's Distributed Component Object Model (DCOM) approach. As used herein, "record requests" and "storage requests" are intended to encompass any of these types of inter-process or inter-object communications, or any other suitable type of inter-process or inter-object communication.

FIG. 2b shows an illustrative arrangement for interactive television program guide equipment 17 in which program guide server 25 obtains program guide data via the Internet. The program guide data obtained by program guide server 25 may be provided by main facility 12 or from some other source (e.g., local information service 15) and made available on the Internet. Internet service system 61 may use any suitable combination of hardware and software capable of providing program guide data from the Internet to program guide server 25 using an Internet based approach (e.g., using the HyperText Transfer Protocol (HTTP), File Transfer Protocol (FTP), etc.). FIG. 2b shows Internet service system 61 as being encompassed by television distribution facility 16. If desired, Internet service system 61 may be located at a facility that is separate from television distribution facility 16. Internet service system 61 may, for example, be located at main facility 12 or at some other Internet node suitable for providing program guide data from the Internet to program guide server 25. The functionality of Internet service system 61 and program guide server 25 may be integrated into one system if desired.

Another suitable arrangement for interactive television program guide equipment 17 is shown in FIG. 2c. Interactive television program guide equipment 17 may include, for example, television distribution facility 16 having program guide server 25 and Internet service system 61. A program guide client application may run on personal computer 23. The client may access program guide server 25 via Internet service system 61 and communications path 20. Personal computer 23 may include processing circuitry 27, memory 29, storage device 31, communications device 35, and monitor 39.

Processing circuitry 27 may include any suitable processor, such as a microprocessor or group of microprocessors, and other processing circuitry such as caching circuitry, direct memory access (DMA) circuitry, input/output (I/O) circuitry, etc. Processing circuitry 27 may also include suitable circuitry for displaying television programming. Personal computer 23 may include, for example, a PC/TV card. Memory 29 may be any suitable memory, such as random access memory (RAM) or read only memory (ROM), that is suitable for storing the computer instructions and data. Storage device 31 may be any suitable storage device, such as a hard disk, floppy disk drive, flash RAM card, recordable CD-ROM drive, or any other suitable storage device. Communications device 35 may be any suitable communications device, such as a conventional analog modem or cable modem.

An illustrative arrangement for user television equipment 22 of FIGS. 2a and 2b is shown in FIG. 3. User television equipment 22 of FIG. 3 receives analog video or a digital video stream and data, program guide data, or any suitable combination thereof, from television distribution facility 16 (FIG. 1) at input 26. During normal television viewing, a user tunes set-top box 28 to a desired television channel. The signal for that television channel is then provided at video output 30. The signal supplied at output 30 is typically either

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a radio-frequency (RF) signal on a predefined channel (e.g., channel 3 or 4), or an analog demodulated video signal, but may also be a digital signal provided to television 36 on an appropriate digital bus (e.g., a bus using the Institute of Electrical and Electronics Engineers (IEEE) 1394 standard, (not shown)). The video signal at output 30 is received by optional secondary storage device 32.

The interactive television program guide client may run on set-top box 28, on television 36 (if television 36 has suitable processing circuitry and memory), on a suitable analog or digital receiver connected to television 36, or on digital storage device 31 if digital storage device 31 has suitable processing circuitry and memory. The interactive television program guide client may also run cooperatively on a suitable combination of these devices. Interactive television application systems in which a cooperative interactive television program guide application runs on multiple devices are described, for example, in Ellis U.S. patent application Ser. No. 09/186,598, filed Nov. 5, 1998, which is hereby incorporated by reference herein in its entirety.

Secondary storage device 32 can be any suitable type of analog or digital program storage device or player (e.g., a videocassette recorder, a digital versatile disc (DVD) player, etc.). Program recording and other features may be controlled by set-top box 28 using control path 34. If secondary storage device 32 is a videocassette recorder, for example, a typical control path 34 involves the use of an infrared transmitter coupled to the infrared receiver in the videocassette recorder that normally accepts commands from a remote control such as remote control 40. Remote control 40 may be used to control set-top box 28, secondary storage device 32, and television 36.

If desired, a user may record programs, program guide data, or a combination thereof in digital form on optional digital storage device 31. Digital storage device 31 may be a writeable optical storage device (such as a DVD player capable of handling recordable DVD discs), a magnetic storage device (such as a disk drive or digital tape), or any other digital storage device. Interactive television program guide systems that have digital storage devices are described, for example, in Hassell et al. U.S. patent application Ser. No. 09/157,256, filed Sep. 17, 1998, which is hereby incorporated by reference herein in its entirety.

Digital storage device 31 can be contained in set-top box 28 or it can be an external device connected to set-top box 28 via an output port and appropriate interface. Digital storage device 31 may, for example, be contained in local media server 29. If necessary, processing circuitry in set-top box 28 formats the received video, audio and data signals into a digital file format. Preferably, the file format is an open file format such as the Moving Picture Experts Group (MPEG) MPEG-2 standard or the Moving Joint Photographic Experts Group (MJPEG) standard. The resulting data is streamed to digital storage device 31 via an appropriate bus (e.g., a bus using the Institute Electrical and Electronics Engineers (IEEE) 1394 standard), and is stored on digital storage device 31. In another suitable approach, an MPEG-2 data stream or series of files may be received from distribution equipment 21 and stored.

Television 36 receives video signals from secondary storage device 32 via communications path 38. The video signals on communications path 38 may either be generated by secondary storage device 32 when playing back a pre-recorded storage medium (e.g., a videocassette or a recordable digital video disc), by digital storage device 31 when playing back a prerecorded digital medium, may be passed through from set-top box 28, may be provided directly to

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television 36 from set-top box 28 if secondary storage device 32 is not included in user television equipment 22, or may be received directly by television 36. During normal television viewing, the video signals provided to television 36 correspond to the desired channel to which a user has tuned with set-top box 28. Video signals may also be provided to television 36 by set-top box 28 when set-top box 28 is used to play back information stored on digital storage device 31.

Set-top box 28 may have communications device 37 for communicating with program guide server 25 over communications path 20. Communications device 37 may be a modem (e.g., any suitable analog or digital standard, cellular, or cable modem), network interface card (e.g., an Ethernet card, Token ring card, etc.), a combination of such devices, or any other suitable communications device. Television 36 may also have such a suitable communications device if desired.

Set-top box 28 may have memory 44. Memory 44 may be any memory or other storage device, such as a random access memory (RAM), read only memory (ROM), flash memory, a hard disk drive, a combination of such devices, etc., that is suitable for storing program guide client instructions and program guide data for use by the program guide client.

A more generalized embodiment of user television equipment 22 of FIG. 3 is shown in FIG. 4. As shown in FIG. 4, program guide data from television distribution facility 16 (FIG. 1) and programming are received by control circuitry 42 of user television equipment 22. The functions of control circuitry 42 may be provided using the set-top box arrangement of FIGS. 2a and 2b. Alternatively, these functions may be integrated into an advanced television receiver, personal computer television (PC/TV) such as shown in FIG. 2c, or any other suitable arrangement. If desired, a combination of such arrangements may be used.

User television equipment 22 may also have secondary storage device 47 and digital storage device 49 for recording programming. Secondary storage device 47 can be any suitable type of analog or digital program storage device (e.g., a videocassette recorder, a digital versatile disc (DVD), etc.). Program recording and other features may be controlled by control circuitry 42. Digital storage device 49 may be, for example, a writeable optical storage device (such as a DVD player capable of handling recordable DVD discs), a magnetic storage device (such as a disk drive or digital tape), or any other digital storage device.

User television equipment 22 may also have memory 63. Memory 63 may be any memory or other storage device, such as a random access memory (RAM), read only memory (ROM), flash memory, a hard disk drive, a combination of such devices, etc., that is suitable for storing program guide client instructions and program guide data for use by control circuitry 42.

User television equipment 22 of FIG. 4 may also have communications device 51 for supporting communications between the program guide client and program guide server 25 and via communications path 20. Communications device 51 may be a modem (e.g., any suitable analog or digital standard, cellular, or cable modem), network interface card (e.g., an Ethernet card, Token ring card, etc.), a combination of such devices, or any other suitable communications device.

A user controls the operation of user television equipment 22 with user interface 46. User interface 46 may be a pointing device, wireless remote control, keyboard, touchpad, voice recognition system, or any other suitable user

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input device. To watch television, a user instructs control circuitry 42 to display a desired television channel on display device 45. To access the functions of the program guide, a user instructs the program guide implemented on interactive television program guide equipment 17 to generate a main menu or other desired program guide display screen for display on display device 45. If desired, the program guide client running on user television equipment 22 may provide users with access to program guide features without requiring them to navigate the Internet.

The program guide may provide users with an opportunity to access program guide features through a main menu. A main menu screen, such as illustrative main menu screen 100 of FIG. 5, may include menu 102 of selectable program guide features 106. If desired, program guide features 106 may be organized according to feature type. In menu 102, for example, program guide features 106 have been organized into three columns. The column labeled "TV GUIDE" is for listings related features, the column labeled "MSO SHOWCASE" is for multiple system operator (MSO) related features, and the column labeled "VIEWER SERVICES" is for viewer related features. The interactive television program guide may generate a display screen for a particular program guide feature when a user selects that feature from menu 102.

Main menu screen 100 may include one or more selectable advertisements 108. Selectable advertisements 108 may, for example, include text and graphics advertising pay-per-view programs or other programs or products. When a user selects a selectable advertisement 108, the program guide may display information (e.g., pay-per-view information) or take other actions related to the content of the advertisement. Pure text advertisements may be presented, if desired, as illustrated by selectable advertisement banner 110.

Main menu screen 100 may also include other screen elements. The brand of the program guide product may be indicated, for example, using a product brand logo graphic such as product brand logo graphic 112. The identity of the television service provider may be presented, for example, using a service provider logo graphic such as service provider logo graphic 114. The current time may be displayed in clock display region 116. In addition, a suitable indicator such as indicator graphic 118 may be used to indicate to a user that mail from a cable operator is waiting for a user if the program guide supports messaging functions.

The interactive television program guide may provide a user with an opportunity to view television program listings. A user may indicate a desire to view program listings by, for example, positioning highlight region 120 over a desired program guide feature 106. Alternatively, the program guide may present program listings when a user presses a suitable key (e.g., a "guide" key) on remote control 40. When a user indicates a desire to view television program listings, the program guide client requests listings from program guide server 25 and generates an appropriate program listings screen for display on display device 45 (FIG. 4). Program listings screens may be overlaid on a program being viewed by a user or overlaid on a portion of the program in a "browse" mode. Program listings screens are described, for example, in Knudson et al. U.S. patent application Ser. No. 09/357,941, filed Jul. 16, 1999, which is hereby incorporated by reference herein in its entirety.

A program listings screen may contain one or more groups or lists of program listings organized according to one or more organization criteria (e.g., by time, by channel, by program category, etc.). The program guide may, for



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example, provide a user with an opportunity to view listings by time, by channel, according to a number of categories (e.g., movies, sports, children, etc.), or may allow a user to search for a listing by title. Program listings may be displayed using any suitable list, table, grid, or other suitable display arrangement. If desired, program listings screens may include selectable advertisements, product brand logo graphics, service provider brand graphics, clocks, or any other suitable indicator or graphic.

A user may indicate a desire to view program listings by time, channel, or category by, for example, selecting a selectable feature **106** from menu **102**. In response, the program guide client may issue one or more requests to program guide server **25** for listings in the selected category if such listings are not already cached in memory **63** (FIG. **4**). Program guide server **25** may retrieve program guide data stored on storage device **56**, on another server, or from Internet service system **61**, and provide the data to the program guide client via program guide distribution equipment **21**.

The program guide client may display program listings in a suitable program listings screen on user television equipment **22**. FIG. **6** illustrates the display of program listings by time. Program listings screen **130** of FIG. **6** may include highlight region **151**, which highlights the current program listing **150**. A user may position highlight region **151** by entering appropriate commands with user interface **46**. For example, if user interface **46** has a keypad, a user can position highlight region **151** using “up” and “down” arrow keys on remote control **40**. A user may select a listing by, for example, pressing on the “OK” or “info” key on remote control **40**. Alternatively, a touch sensitive screen, trackball, voice recognition device, or other suitable device may be used to move highlight region **151** or to select program listings without the use of highlight region **151**. In still another approach, a user may speak a television program listing into a voice request recognition system. These methods of selecting program listings are merely illustrative. Any other suitable approach for selecting program listings may be used if desired.

A user may view additional listings for the time slot indicated in timebar **111** by, for example, pressing an “up” or “down” arrow, or a “page up” or “page down” key on remote control **40**. The user may also see listings for the next 24 hour period, or the last 24 hour period, by pressing a “day forward” or “day backward” key on remote control **40**, respectively. If there are no listings starting exactly 24 hours in the indicated direction, the program guide may pick programs starting at either closer or further than 24 hours away. If desired, the program guide may require a user to scroll through advertisement banner **110**. A user may view program listings for other time slots by, for example, pressing “right” and “left” arrows on remote control **40**.

FIG. **7** illustrates the display of program listings by channel. A user may scroll up and down to view program listings for additional time slots, and may scroll left and right to view program listings for other channels. If desired, the day for which program listings are displayed may be included in display area **147** with the channel number as shown.

The program guide may provide users with an opportunity to view program listings sorted by category. A user may, for example, press a special category key on remote control **40** (e.g., “movies”, “sports”, “children”, etc.), select a selectable category feature from main menu screen **100** (FIG. **5**), or may indicate a desire to view program listings by category using any other suitable approach. FIG. **8a** is an illustrative

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program listings screen in which program listings for movies are displayed. FIG. **8b** is an illustrative program listings screen in which program listings for sports-related programming are displayed. FIG. **8c** is an illustrative program listings screen in which program listings for children’s programs are displayed.

In program listings display screens such as those shown in FIGS. **7a** and **8a–8c** for example, program listings within lists **129** may be divided into predefined time slots, such as into 30 minute time slots. Between each time slot, separator **128** may be displayed to indicate to a user that a user has scrolled or paged program listings from one time slot to the next. In FIG. **7** for example, a user is scrolling from program listings in the 11:30 PM to the 12:00 AM time slot. This is indicated by the display of the name of the next week day. In FIGS. **8a–8c**, for example, a user is scrolling from program listings in the 12:30 PM time slot to program listings in the 1:00 PM time slot. If desired, separators **128** may be displayed only for those timeslots for which there are listings. When the user scrolls within listings, highlight region **151** may skip separator **128**. FIGS. **6**, **7**, and **8a–8c** also illustrate how the program guide may display an advertisement banner so that a user is required to scroll past the banner to access additional program listings.

The program listings screens of FIGS. **6**, **7**, **8a**, **8b**, and **8c** have also been shown as including various other screen elements. Program listings display screens may include, for example, selectable advertisements, advertisement banners, brand logos, service provider logos, clocks, message indicators, or any other suitable screen element. The program guide may provide users with access to selectable advertisements in response to, for example, a user pressing left arrows to move highlight region **151** to highlight a selectable advertisement. In the illustrative program listings screens of FIGS. **6**, **8a**, **8b**, and **8c**, the program guide may also adjust the time displayed in timebar **123** as the user scrolls or pages through program listings to reflect the time of the program listing at the top of the list.

The program guide client may provide a user with an opportunity to define sophisticated boolean or natural language expressions of one or more criteria. Such criteria may include, for example, attribute type and attribute information that is provided by program guide server **25**. The user defined expressions may be stored by program guide server **25** for searching through and sorting program guide data, scheduling reminders, automatically recording programs, and parentally controlling programs. Criteria may also be derived by the program guide server or program guide client from user profiles or by monitoring usage of the program guide or advertising. Program guide server **25** may also use expressions to obtain other types of information or programs. Program guide server **25** may obtain, for example, video-on-demand programs, web site links, games, chat group links, merchandise information, or any other suitable information or programming from data sources **14** located at main facility **12** or other facilities. The program guide client may provide users with an opportunity to access, modify, or delete the expressions if desired.

A user may indicate a desire to search program guide data by, for example, selecting selectable Search feature **106** of main menu **102** (FIG. **5**). In response, the program guide client may display a criteria screen, such as illustrative criteria screen **141** and **149** of FIGS. **9a** and **9b**. The program guide client may display criteria screen **141** of FIG. **9a** to provide a user with an opportunity to define a boolean expression. The user may construct a boolean expression by selecting criteria such as attribute types, attributes, logical

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operators, and sorting criteria. User selectable criteria may also include what program guide server **25** searches for such as, for example, program listings, program information, web sites, video-on-demand videos, software, or any other suitable program guide data, other information, or videos.

Users may define expressions by, for example, arrowing up or down between criteria, arrowing left or right to choose an attribute, attribute type or logical operator, and pressing a suitable key to indicate that the user is finished (e.g., an “OK” key). In the example of FIG. **9a**, the user has constructed a boolean expression for all action programs that have the actor Bruce Willis, that start between 7:00P and 11:00P, and that end between 9:00P and 1:30A on the current day. FIG. **9a** has not been shown as including criteria for selecting what program guide server **25** searches for to avoid over-complicating the drawing.

The program guide client may display criteria screen **149** of FIG. **9b** to provide a user with an opportunity to construct a natural language expression. The user may enter a natural language phrase, such as “List in alphabetical order all action programs starring Bruce Willis and that start today between 7:00P and 11:00P and that end between 9:00P and 1:30A” using user interface **46** (FIG. **4**).

The program guide client may submit the user defined boolean expression or the natural language expression to program guide server **25** for processing. Program guide server **25** may process the expression, and provide the resulting program guide data (e.g., program listings, program information, software, Internet links, etc.) or video programs to the program guide client for display. FIG. **11** shows an illustrative program listings screen that may be displayed by the program guide client in response to the expressions defined in FIGS. **9a** and **9b**.

Users may also indicate a desire to have program guide server **25** automatically process expressions by, for example, saving defined expressions as agents. A user may indicate a desire to save an expression as an agent by, for example, selecting Save As Agent selectable feature **147** of FIGS. **9a** and **9b** after defining a boolean or natural language expression. The program guide client may automatically highlight Save As Agent selectable feature **147** when a user indicates that the user is finished defining an expression (e.g., by pressing an “OK” key). If desired the program guide client may provide the user with an opportunity to name the agent.

Users may access saved expressions or agents by, for example, selecting selectable Agent feature **106** of main menu **102**. In response, the program guide client may display a list of saved expressions or agents. An illustrative agents screen **1101** is shown in FIG. **10**. A user may indicate a desire to view program listings by, for example, positioning highlight region **151** over the desired expression and pressing an “OK” key on remote control **40**. In response to a user indicating a desire to access an expression, the program guide client may submit the user defined expression to program guide server **25** for processing. Program guide server may process the expression, and provide program listings to the program guide client for display in a program listings screen. For example, if a user saved the boolean expression of FIG. **9a**, named it “Bruce Willis”, and then indicated a desire to access listings for the expression the program guide client may display the listings screen of FIG. **10**.

In still another approach, the program guide client may provide the expression to program guide server **25** in response to the user saving the expression as an agent. Program guide server **25** may store the expression and monitor the data stored on storage device **56** for program

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guide listings, program information, other information, software, videos, etc., that match the expression. Program guide server **25** may also query other sources for program guide data and videos that match the expression via, for example, the Internet. Program guide server **25** may obtain the program guide data, other information or videos from storage device **56** or other sources and provide them to the program guide client when the user indicates a desire to access the agent. Alternatively, program guide server **25** may provide the program guide data, other information, or videos to the program guide client automatically when the user accesses a feature of the program guide that would display such information. In still another suitable approach, program guide server **25** may provide, for example, program identifiers and air times to the program guide client for use in generating program reminders that indicate found programs.

The program guide may also provide users with an opportunity to define user preferences that allow users to customize their program guide experience. Systems in which interactive television program guides provide users with opportunities to define user preference profiles are described, for example, in Ellis et al. U.S. patent application Ser. No. 09/034,934, filed Mar. 4, 1998, which is hereby incorporated by reference herein in its entirety. Users may indicate a desire to set up user preference profiles, for example, by selecting a selectable Setup feature **106** from main menu **102** of FIG. **5**. When a user selects a selectable Setup feature **106** from main menu **102**, the program guide client may display a setup screen, such as illustrative setup screen **411** of FIG. **12**.

Setup screen **411** may provide a user with an opportunity to set up various guide features, set parental control features, set features of set-top box **28** (FIG. **3**), set audio features, set the screen position, set user preference profiles, or to set up any other feature or suitable combination of features. The user may indicate a desire to set up a user preference profile by, for example, selecting User Profile feature **417**. When the user indicates a desire to set up a user preference profile, the program guide client may display a user preference profile setup screen, such as the preference profile setup screens shown in FIGS. **13a–13f**. This method of defining user profiles is only illustrative, as any suitable method may be used.

In practice, there may be multiple users associated with each user television equipment **22**. The program guide may provide users with the ability to set up multiple user preference profiles. Users may switch between user preference profiles by, for example, selecting preference profile selector **109** and arrowing right or left to select the desired user preference profile. In FIGS. **13a–13f**, for example, the user has selected Preference profile #1, which may correspond to a particular user.

User preference profiles may include criteria such as preference attributes **104** and preference levels **106**. Preference attributes **104** may be organized by type. Attribute types and attributes may be programmed into the program guide client, or may be retrieved by the program guide client from program guide server **25**. In the former approach, the available attribute types and attributes may remain static until the program guide client is updated. In the latter approach, the available attribute types and attributes may be dynamic. Suitable attribute types and attributes may be provided at any time by main facility **12** or television distribution facility **16**. Each time a user indicates a desire to set up a user preference profile, the program guide client may query program guide server **25** for the available attribute types and attributes. When a user indicates a desire

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to set up a user preference profile in either approach, the program guide client may query program guide server **25** for the user preference profiles associated with that program guide client.

FIGS. **13a–13f** show six illustrative views of preference profile setup screens in which the user has selected attribute types by, for example, selecting attribute selector **111** and arrowing right or left until a desired preference attribute type is displayed. For example, FIGS. **13a–13f** illustrate how the program guide may provide a user with an opportunity to set preference levels for series, genres, channels, actors and actresses, ratings, and other types of preference attributes, respectively. The user may select preference attributes by, for example, arrowing down after selecting an attribute type. The user may then arrow right or left until a desired attribute is displayed. After the desired preference attribute is displayed, the user may, for example, arrow down to set a preference level for the attribute. The user may then, for example, arrow right or left to select a suitable preference level.

Preference levels that may be used to indicate the user's interest or disinterest in a given preference attribute include strong like, weak like, strong dislike, weak dislike, mandatory (appropriate, e.g., for closed-captioning for a deaf person), illegal (appropriate, e.g., for R-rated programs for a child) and don't care (neutral). After the user indicates that he or she is finished defining a profile (e.g., by pressing an "OK" key or remote control **40**), the program guide client may provide the preference profile data to program guide server **25** for use in providing program guide data. The user may arrow down again to select additional criteria, or arrow up to edit criteria that has already been selected. The user may delete an attribute by, for example, setting its preference level to "don't care."

The user may activate or deactivate one or more defined preference profiles by, for example, selecting selectable Profile feature **106** from main menu **102** of FIG. **5**. The program guide client may respond by, for example, querying program guide server **25** for any defined preference profiles, providing the user with a list of preference profiles, and providing the user with an opportunity to activate or deactivate one or more preference profiles as shown in FIG. **14**. A user may deactivate a preference profile by, for example, setting the profile to non-active. A user may set a preference profile as active to varying degrees. For example, a user may set a profile as active by setting the profile to "wide", "moderate", or "narrow" scope.

The program guide client may also indicate to program guide server **25** which profiles are activated or deactivated. The program guide server may use, for example, the attributes of one or more user preference profiles as additional criteria when retrieving data in response to data requests from the program guide client. If multiple preference profiles are used simultaneously, program guide server **25** may reconcile any conflicts using any suitable approach. Interactive television program guide systems that resolve conflicts among multiple active user preference profiles are described, for example, in above-mentioned Ellis et al. U.S. patent application Ser. No. 09/034,934, filed Mar. 4, 1998.

FIG. **15** is a table containing an illustrative list of programs that might be available to a user. The results that appear under the columns labeled "narrow scope", "moderate scope", and "wide scope", show which programs satisfy the preference attributes and preference levels of, for example, Profile **#1** as illustratively defined in FIGS. **13a–13f**. In practice, a listings screen generated based on a profile that is set to widest scope may typically include a

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larger number of program listings depending on the mandatory attributes set by the user.

When the user activates Profile **#1** and sets it to the widest scope, program guide server **25** may provide program guide data for programs that have all mandatory attributes and no illegal attributes. For example, Seinfeld, The Shining, ER, Terminator, and My Stepmother is an Alien are included in the widest preference scope because they have the only mandatory attribute that is specified in Profile **#1**—closed-captioning (as set in FIG. **13f**). In addition, they have no preference attributes with a preference level of illegal (R rating, TV-MA rating, or NC-17 rating (as set in FIG. **13e**). The Night at the Opera is not included because it does not have a mandatory attribute (closed-captioning). Dante's Peak is not included because it has a illegal rating (R). An illustrative program listings screen that may be displayed by the program guide client with such limited data is shown in FIG. **16a** (ER has not been listed because, presumably, it would be in a different time block).

When the user activates Profile **#1** and sets it to the moderate scope, program guide server **25** may provide program guide data for programs that have no preference attributes with an associated preference level of disliked, that have all mandatory attributes, and that have no illegal attributes. The Shining is not included because horrors have a preference level of "weak dislike" (as set in FIG. **13b**). Dante's Peak is not included because it has an R-rating, which has an attribute level of illegal (as set in FIG. **13e**). Night at the Opera is not included because it is not closed-captioned, which is a mandatory attribute (as set in FIG. **13f**). The Terminator, for example is not within the moderate scope of Profile **#1** because the preference attribute of horror in Profile **#1** has an associated preference level of "weak dislike" and the preference attribute of Schwarzenegger (an actor in the program Terminator) has an associated preference level of "strong dislike" (as set in FIGS. **13b** and **13d**, respectively). Seinfeld and ER are included because they do not have any disliked attributes.

When faced with two different preference levels associated with the same program, the program guide uses the stronger of the two. My Stepmother is an Alien is included, for example, because it has a "strong like" preference attribute that outweighs the "weak dislike". An illustrative program listings screen that may be displayed by the program guide client with such limited program guide data is shown in FIG. **16b**. In practice, a listings screen generated based on a profile that is set to moderate scope may typically include a larger number of program listings depending on the mandatory attributes set by the user.

When the user activates Profile **#1** and sets it to the narrow preference scope, program guide server **25** may provide program guide data for all liked programs that are not more disliked and that have all mandatory attributes and no illegal attributes. The Shining is not included because it has a weakly disliked attribute, horror. Terminator is not included because it has a strongly disliked attribute, Arnold Schwarzenegger. My Stepmother is an Alien is included because the strongly liked attribute of comedy has priority over the weakly disliked attribute of horror. Dante's Peak is not included because it has a rating of R. Night at the Opera is not included because it is not closed-captioned. ER is not within the narrow scope because it does not have any liked attributes. It is at best, neutral. An illustrative program listings screen that may be displayed by the program guide client with such limited program guide data is shown in FIG. **16c**.

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The program guide may also provide users with an opportunity to schedule reminders using boolean or natural language expressions having one or more criteria. If desired, program guide server **25** may schedule reminders based on user preference profiles and agents. Reminders may be scheduled for individual programs or series of programs. Systems in which reminders are set for series of programs are described, for example, in Knudson et al. U.S. patent application Ser. No. 09/330,792, filed Jun. 11, 1999, which is hereby incorporated by reference herein in its entirety.

A user may indicate a desire to schedule a reminder by, for example, selecting a selectable Reminders feature **106** from main menu **100** of FIG. **5**. In response, the program guide may display a criteria screen. Illustrative criteria screens **161** and **169** are shown in FIGS. **17a** and **17b**. The program guide client may display criteria screen **161** of FIG. **17a** to provide a user with an opportunity to set reminders according to a boolean type expression. The user may construct a boolean expression by selecting criteria such as attribute types, attributes, and logical operators. The user may make such selections, for example, using any suitable combination of right, left, up, or down arrow key sequences to sequence through the attribute types, attributes and logical operators. In the example of FIG. **17a**, the user has defined a boolean expression to schedule reminders for comedies that star Gary Shandling and that have a rating less than R. In the example of FIG. **17b**, the user has defined a similar natural language expression.

The program guide client may submit the user defined boolean or natural language expression to program guide server **25** for processing. Program guide server **25** may process the expression and schedule reminders for all of the programs that meet the expression. Program reminders may be scheduled using any suitable approach. In one suitable approach, program guide server **25** may store program identifiers and air times and send messages to the program guide client at an appropriate time before a program starts. In another suitable approach, program guide server **25** may process an expression and provide program identifiers and air times to the program guide client. The program guide client may, for example, maintain a list of program identifiers and display program reminders at an appropriate time before the programs start.

The program guide may remind a user that a program is airing at the time a program airs. In an alternative approach, the program guide may remind a user at some predetermined period of time before the program airs that a program is going to air. FIGS. **18** and **19** show illustrative program reminder lists **171**. In FIG. **18**, reminder list **171** is overlaid on top of the currently display television program to provide a user with the opportunity to view a reminder while still viewing a portion of the television program that a user is watching. In FIG. **19**, reminder list **171** is shown overlaid on top of a program listings display screen. The program guide may provide a user with an opportunity to scroll through reminder list **171** by, for example, using remote control arrow keys. The program guide may hide the reminder list when, for example, a user selects hide reminder feature **172**. The guide may also display reminder list **171** if, for example, the user presses an "OK" key at any time while watching TV.

The program guide may also provide users with an opportunity to schedule programs for recording by secondary storage device **47** or digital storage device **49** (FIG. **4**) using boolean or natural language expressions. If desired, program guide server **25** may schedule programs for recording based on user preference profiles or agents. Programs may also be scheduled for recording by program guide

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server **25**. Program guide systems in which programs are recorded by a remote server are described, for example, in Ellis et al. U.S. patent application Ser. No. 09/332,244, filed Jun. 11, 1999, which is hereby incorporated by reference herein in its entirety.

A user may indicate a desire to schedule a program for recording by, for example, selecting a selectable Record feature **106** from main menu **102** of FIG. **5**. In response, the program guide may display a criteria screen, such as illustrative criteria screens **161** and **169** of FIGS. **17a** and **17b**. The program guide client may display criteria screen **161** of FIG. **17a** to provide a user with an opportunity to schedule a program for recording according to a boolean type expression. The user may construct a boolean expression by selecting criteria such as attribute types, attributes, and logical operators. The user may make such selections, for example, using any suitable combination of right, left, up, or down arrow key sequences to sequence through the attribute types, attributes and logical operators. In the example of FIG. **17a**, the user has defined a boolean expression to schedule for recording comedies that star Gary Shandling and that have a rating less than R. In the example of FIG. **17b**, the user has defined a similar natural language expression with similar criteria.

The program guide client may submit the user defined boolean or natural language expression to program guide server **25** for processing. Program guide server **25** may process the expression and schedule all of the programs that meet the expression for recording. Recording by program guide server **25** may be performed, for example, as described in above-mentioned Ellis et al. U.S. patent application Ser. No. 09/332,244, filed Jun. 11, 1999. In another suitable approach, program guide server **25** may process the expression and provide program identifiers and air times to the program guide client. The program guide client may, for example, maintain a list of program identifiers and program air times and may instruct optional secondary storage device **47** or digital storage device **49** to record the programs.

The program guide may also provide users with an opportunity to parentally control titles, programs, or channels using boolean or natural language expressions. If desired, program guide server **25** may parentally control programs based on user preference profiles. A user may indicate a desire to parentally control titles, programs, or channels by, for example, selecting a selectable Parents feature **106** from main menu **102** of FIG. **5**. In response, the program guide may display a criteria screen, such as illustrative criteria screens **161** and **169** of FIGS. **17a** and **17b**. The program guide client may display criteria screen **161** of FIG. **17a** to provide a user with an opportunity to control programs, for example, according to a boolean type expression. The user may construct a boolean type expression by selecting criteria such as attribute types, attributes, and logical operators. The user may make such selections, for example, using any suitable combination of right, left, up, or down arrow key sequences to sequence through the attribute types, attributes and logical operators. In the example of FIG. **17a**, the user has defined a boolean expression to lock out comedies that star Gary Shandling and that have a rating less than R. In the example of FIG. **17b**, the user has defined a similar natural language expression with similar criteria.

The program guide client may submit the user defined boolean or natural language expression to program guide server **25** for processing. Program guide server **25** may process the expression, determine all of the programs that meet the expression, and indicate the programs that are locked to the program guide client when providing program

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listings to the program guide client using a suitable indicator (e.g., “locked” tag contained in the listings information). The program guide client may, for example, indicate that a program is locked by displaying lock indicator 161 when displaying locked listings in a listing screen, as shown, for example, in FIG. 7. By placing the processing and storage burdens of locking programs on program guide server 25 instead of user television equipment 22, more titles may be locked than would otherwise because of the limited processing and storage resources of user television equipment 22. If desired, titles, programs, or channels may also be locked using conventional parental control techniques. Program guide systems that provide users with an opportunity to parentally control titles, programs, or channels are described, for example, in above-mentioned Knudson et al. U.S. patent application Ser. No. 09/357,941 filed Jul. 16, 1999.

Program guide server 25 may also record the viewing histories of users on storage device 56. Viewing histories may be created using any suitable approach. The program guide client may, for example, keep track of all of the programs that a user watches for longer than a predefined time, and record the household that the guide client is running in, the current active preference profile or profiles, the program (or its identifier), and how long the user watched the program. The program guide client may also track when users order pay-per-view programs, record programs, and schedule reminders for programs, and may also provide this information to program guide server 25 as part of the viewing histories. Other types of information may also be included in the viewing histories. User defined expressions, for example, may be stored by program guide server 25 to track what types of programs users search for. In addition, user demographic values may be calculated by program guide server 25 and used to more accurately target advertisements or recommend programs. Systems in which user demographic values are calculated are described, for example, in Knudson et al. U.S. patent application Ser. No. 09/139,777, filed Aug. 25, 1998, which is hereby incorporated by reference herein in its entirety.

The program guide client may provide the viewing history information to program guide server 25 continuously (e.g., each time the program guide client determines that a user has watched a program for the predefined time), periodically, in response to polls or requests from program guide server 25, or with any other suitable frequency. If desired, the program guide client may also monitor advertisement usage, such as what selectable advertisements users have selected. Program guide systems in which user viewing activities and advertisement usage are tracked are described, for example, in Thomas et al. U.S. patent application Ser. No. 09/139,798, filed Aug. 25, 1998, which is hereby incorporated by reference herein in its entirety.

The program guide may process user profiles along with the viewer histories to present a more customized viewing experience to the user. The program guide may, for example, identify which programs or series episodes users have watched. Program guide server 25 may, for example, identify episodes that users have not yet watched and may indicate such episodes to the program guide client when the program guide client requests program listings. The program guide client in turn may indicate that a program is new to a household by, for example, displaying a suitable icon or changing the display characteristics of a listing (e.g., changing its color). FIG. 7 shows, for example, the display of New indicator 159 in list 129 to indicate to a user that the user has not seen a particular episode of Saturday Night Live. Pro-

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gram guide server 25 may also calculate ratings, such as Nielsen ratings, based on the viewing histories and provide such information to interested parties.

The program guide may also use the viewing history and user preferences to target the user with advertisements. Program guide systems in which users are targeted with advertisements are described, for example, in Knudson et al. U.S. patent application Ser. No. 09/034,939, filed Mar. 4, 1998, which is hereby incorporated by reference herein in its entirety. Targeted advertisements may contain text, graphics, or video. Targeted advertisements may also be active objects containing various user-selectable options. For example, a targeted advertisement may allow the user to request that additional information on a product be mailed to the user’s home, may allow the user to purchase a product, or may allow the user to view additional information on a product using the program guide. Targeted advertisements may be displayed in any suitable program guide display screen. The program guide client may, for example, display targeted advertisements in criteria or profile screens based on a displayed criteria, profile, or agent. Selectable advertisements 108 and advertisement banner 110, for example, may be targeted advertisements.

The program guide may make personalized viewing recommendations based on the viewing histories, preference profiles, or any suitable combination thereof. Program guide server 25 may, for example, construct relational database expressions from the viewing histories that define expressions for the program categories and ratings for programs that users have watched, scheduled reminders for, searched for, or ordered the most. Program guide server 25 may then apply user preference profile criteria to the programs, and generate personal viewing recommendations. In still another suitable approach, program guide server 25 or the program guide client may filter viewing recommendations that are generated by main facility 12 or television distribution facility 16 based on similar expressions, profiles, viewing histories, etc.

Assume, for the purpose of illustration, that a user has run the expression illustrated in FIGS. 9a and 9b, and has set the user profiles of FIGS. 13a–13f; program guide server 25 may determine that the movie Armageddon meets the criteria of the expression that was run, and also meets the criteria of the current user profile. Armageddon is a movie (strong like), an action (strong like), and does not have an illegal rating (it is rated PG-13). Program guide server 25 may indicate the movie Armageddon (or its identifier) and its air time to the program guide client and indicate to the client (e.g., using a second identifier) that a viewer recommendation for the movie is to be displayed. The program guide client may display a viewer recommendation overlay, such as overlay 2111 shown in FIGS. 20a and 20b, over a program the user is watching or over a program guide display screen, respectively. The user may press a suitable key on remote control 40 (e.g., an “info” key) to access additional information for a recommended program. An illustrative additional information screen is shown in FIG. 20c. Additional program information screens are described, for example, in above-mentioned Knudson et al. U.S. patent Application Ser. No. 09/357,941 filed Jul. 16, 1999. The program guide client may tune user television equipment 22 to the channel on which a recommended viewing is aired when, for example, a user selects “Yes”. If desired, recommendations may include a suitable graphic, such as a graphic indicating the recommended program.

FIGS. 21–24 show flowcharts of illustrative steps involved in performing various aspects of the present inven-

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tion. The steps shown in FIGS. 21–24 are only illustrative, and may be performed in any suitable order.

FIG. 21 shows a flowchart of illustrative steps involved in storing preference profiles on program guide server 25. If desired, the steps shown may be performed in a client-server interactive program guide system in which users are not required to navigate the Internet. At step 2000, the program guide client running on user television equipment 22 provides a user with an opportunity to define a preference profile. The preference profile may include user selected or defined levels of desirability of various program characteristics, such as genre and rating. Users may define preference profiles by, for example, selecting a profile (step 2002) and selecting criteria (step 2004) such as attribute types (step 2006) and attributes (step 2008). Preference profiles may, for example, be created as database files (e.g., SQL files) containing suitable database expressions that are provided to program guide server 25. Program guide server 25 may store the preference profiles at step 2012.

Program guide data is provided from program guide server 25 to the program guide client and is displayed by the program guide client at steps 2020 and 2030, respectively. Program guide server 25 or the program guide client may use preference profiles to filter out undesirable program guide data. This may be accomplished using any suitable approach. Program guide server 25 may, for example, only provide program listings information or other program guide data that meets the preference profile or profiles to the program guide client (step 2025). Alternatively, program guide server 25 may provide program guide data, other information, or videos to the program guide client and the program guide client may filter the data, other information, or videos by displaying only those elements that meet the preference profile or profiles (step 2035).

Program guide server 25 may perform additional functions based on preference profiles if desired. Program guide server 25 may, for example, lock programs according to preference profiles (step 2040), automatically record programs according to preference profiles (step 2050), schedule reminders based on preference profiles (step 2060), or target advertising based on preference profiles (step 2070). If desired, program guide server 25 may also provide viewing recommendations based on preference profiles at step 2080. Step 2080 may also include filtering viewing recommendations based on preference profiles provided by main facility 12 or television distribution facility 16 (step 2085).

FIG. 22 is a flowchart of illustrative steps involved in providing users with an opportunity to search program guide data in accordance with the principles of the present invention. If desired, the steps shown may be performed in a client-server interactive program guide system in which users are not required to navigate the Internet. At step 2100, the program guide client provides a user with an opportunity to define an expression, such as a boolean or natural language expression. This may include, for example, providing a user with an opportunity to select attribute types, attributes, and logical operators (steps 2102, 2104, and 2106, respectively). The user may also be provided with an opportunity to save the expression as an agent (step 2110). The program guide client provides the expression to program guide server 25 for processing at step 2120. The program guide client may for example, provide a boolean or natural language expression in a text file. Alternatively, the program guide client may construct suitable database expressions and provide the expressions to program guide server 25 as one or more suitable database files (e.g., as SQL files).

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If the user indicated a desire to save an expression as an agent at step 2110, program guide server 25 may save the expression as an agent at step 2130. Otherwise, program guide server 25 may process the expression (step 2140) using any suitable approach. This may depend on how the expression was provided by the program guide client. If boolean or natural language expressions were provided as text files, for example, program guide server 25 may parse the expressions and construct a suitable database expression. Alternatively, database expressions may have been provided by the program guide client. In either approach, program guide server 25 may search its database or databases at other facilities for program guide data (e.g., program listings, additional program information, etc.), other information (e.g., software, Internet links, etc.), or videos (e.g., video-on-demand videos) and may provide the results to the program guide client at step 2150. At step 2160 the program guide client may display the results on user television equipment 22.

If the user indicated a desire to save the expression as an agent at step 2110, program guide server 25 may save the expression as an agent using any suitable approach. Agents may be maintained, for example, in a database that program guide server 25 monitors periodically. If desired, the agent may be forwarded to other servers at other facilities, thereby providing a user with the ability to monitor multiple databases for program guide data, other information, or videos. Agents may be run automatically (e.g., databases may be queried) on one or more servers at step 2145. Step 2145 may be performed periodically, each time a database is updated, or with any other suitable frequency. Program guide server 25 may provide its results and the results of other servers (if desired) to the program guide client at step 2155. The program guide client may display the results at 2165. The results may be displayed, for example, in the form of reminders for which reminder information was provided at step 2155.

FIG. 23 shows a flowchart of illustrative steps involved in processing and using expressions on program guide server 25 in accordance with the principles of the present invention. If desired, the steps shown may be performed in a client-server interactive program guide system in which users are not required to navigate the Internet. The program guide client provides users with an opportunity to define an expression (e.g., boolean or natural language expressions) at step 2100. This may include, for example, providing a user with an opportunity to select attribute types, attributes and logical operators (steps 2102, 2104, and 2106, respectively). The program guide client provides the expression to program guide server 25 for processing at step 2210 as any suitable type of file. The program guide client may for example, provide a boolean or natural language expression in a text file. Alternatively, the program guide client may construct suitable database expressions and provide the expressions to program guide server 25 as one or more suitable database files (e.g., as SQL files).

Program guide server 25 may process the expression (step 2220) using any suitable approach depending on how the expression was provided to program guide server 25 from the program guide client. If boolean or natural language expressions were provided as text files, for example, program guide server 25 may parse the expressions and construct a suitable database expression. Alternatively, database expressions may have been provided to program guide server 25 from the program guide client. In either approach, program guide server 25 may search its database or databases at other facilities and may provide the results to the

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program guide client or use the results to perform any suitable program guide function.

Reminders may be scheduled based on the results of the search (step 2230). Program guide server 25 may, for example, store reminder information (e.g., program identifiers and air times) at step 2235 and send messages to the program guide client at an appropriate time before a program starts. In another suitable approach, program guide server 25 may process an expression and provide program identifiers and air times to the program guide client. The program guide client may, for example, maintain a list of program identifiers and display program reminders at an appropriate time before the programs start.

Programs may also be automatically recorded by program guide server 25 or user television equipment 22 based on the results of the expression (step 2240). Program guide server 25 may, for example, provide program identifiers and air times to the program guide client. The program guide client may, for example, maintain a list of program identifiers and program air times and may instruct optional secondary storage device 47 or digital storage device 49 to record the programs at the appropriate time.

Programs may be parentally locked based on the expression results (step 2250). Program guide server 25 may, for example, store parental control information (e.g., program identifiers in a database, table, or list of programs to be locked) at step 2260. Program guide server 25 may indicate to the program guide client that programs are locked when providing program listings to the program guide client. Alternatively, program guide server 25 may indicate to the program guide client the programs that were found as a result of the expression. The program guide client may lock the programs locally using any suitable approach. The program guide client may, for example, indicate that a program is locked by displaying lock indicator 161 when displaying locked listings in a listing screen, as shown, for example, in FIG. 7.

FIG. 24 shows a flowchart of illustrative steps involved in tracking and using viewing histories in accordance with the principles of the present invention. If desired, the steps shown may be performed in a client-server interactive program guide system in which users are not required to navigate the Internet. Viewing histories are tracked at step 2300. This may include tracking programs that users watch (step 2310), tracking reminders scheduled by a user with program guide server 25 or using conventional techniques (step 2320), tracking pay-per-view programs that the user orders (step 2330), advertisement usage (step 2335), track recorded programs (step 2337), track any other suitable user activity, or any suitable combination thereof. The program guide client may provide the viewing history information to program guide server 25 continuously (i.e., each time the program guide client determines that a user has watched a program for the predefined time), periodically, in response to polls or requests from program guide server 25, or with any other suitable frequency.

The viewing history tracked in steps 2310–2335 may be stored on program guide server 25 at step 2340. If desired, user-defined expressions that are processed by program guide server 25 may also be stored on program guide server 25 (step 2345). User demographic values may be calculated by program guide server 25 at step 2347. The viewing history and its expressions and user demographic values may be used by program guide server 25 to perform any suitable function. Program guide server 25 may, for example, collect program rating information (step 2350), or target advertising (step 2360).

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Program guide server 25 may search its or another server's database for programs that are consistent with the viewing history (step 2370). If desired, program guide server 25 may find programs that are also consistent with preference profiles stored by program guide server 25 (step 2375). Program guide server may perform any suitable function using the results of the search. Program guide server 25 may, for example, identify episodes of programs that are new to a user (step 2380), or provide viewing recommendations in the form of, for example, reminders or recommendations for non-program items (e.g., software, Internet links, etc.) (step 2390).

The foregoing is merely illustrative of the principles of this invention and various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention.

What is claimed is:

1. A method for use in a client-server interactive program guide system for scheduling reminders according to user defined expressions and providing a customized viewing experience to a user based on programs having scheduled reminders, comprising:

- providing a user with an opportunity to define an expression with an interactive program guide client implemented on user equipment without requiring the user to navigate the Internet;
- storing the expression on a program guide server;
- processing the expression with the program guide server to find programs that satisfy the expression;
- scheduling with the program guide server reminders for programs that satisfy the expression;
- determining at least one program criteria associated with the programs that satisfy the expression;
- determining a set of programs for which reminders have not yet been scheduled; and
- applying the at least one associated program criteria to the set of programs for which reminders have not yet been scheduled to generate at least one personal viewing recommendation.

2. The method defined in claim 1 wherein scheduling with the program guide server reminders for programs that satisfy the expression comprises providing at least one message from the program guide server to the program guide client before each of the programs that satisfy the expression begin.

3. The method defined in claim 1 wherein scheduling with the program guide server reminders for programs that satisfy the expression comprises providing program identifiers for each of the programs that satisfy the expression from the program guide server to the program guide client, wherein the program identifiers are used by the program guide client to generate reminders prior to the start of the programs.

4. A method for use in a client-server interactive program guide system for scheduling programs for recording according to user defined expressions and providing a customized viewing experience to a user based on the scheduled programs, comprising:

- providing a user with an opportunity to define an expression with an interactive program guide client implemented on user equipment without requiring the user to navigate the Internet;
- storing the expression on a program guide server;
- processing the expression with the program guide server to find programs that satisfy the expression;
- scheduling with the program guide server the programs that satisfy the expression for recording;



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determining at least one program criteria associated with the programs that satisfy the expression;  
determining a set of programs not yet scheduled for recording; and

applying the at least one associated program criteria to the set of programs not yet scheduled for recording to generate at least one personal viewing recommendation.

5. The method defined in claim 4 wherein scheduling with the program guide server the programs that satisfy the expression for recording comprises scheduling the recording of the programs that satisfy the expression at the user equipment.

6. The method defined in claim 4 wherein scheduling with the program guide server the programs that satisfy the expression for recording comprises scheduling the recording of the programs that satisfy the at the program guide server.

7. A client-server interactive program guide system for scheduling reminders according to user defined expressions and providing a customized viewing experience to a user based on programs having scheduled reminders, comprising:

user equipment on which an interactive program guide client is implemented, wherein the program guide client is programmed to provide a user with an opportunity to define an expression without requiring the user to navigate the Internet;

a communications path over which the expression is provided by the interactive program guide client to a program guide server, wherein the program guide server is programmed to find programs that satisfy the expression, to schedule reminders for programs that satisfy the expression, to determine at least one program criteria associated with the programs that satisfy the expression, to determine a set of programs for which reminders have not yet been scheduled, and to apply the at least one program criteria to the set of programs for which reminders have not yet been scheduled to generate at least one personal viewing recommendation.

8. The system defined in claim 7 wherein scheduling with the program guide server reminders for programs that satisfy the expression comprises providing at least one message from the program guide server to the program guide client before each of the programs that satisfy the expression begin.

9. The system defined in claim 7 wherein the program guide server is further programmed to provide program identifiers for each of the programs that satisfy the expression to the interactive television program guide client over the communications path, wherein the program identifiers are used by the interactive program guide client to generate the reminders prior to the start of the programs.

10. A client-server interactive program guide system for scheduling programs for recording according to user defined expressions and providing a customized viewing experience to a user based on the scheduled programs, comprising:

user equipment on which an interactive program guide client is implemented, wherein the interactive program guide client is programmed to provide a user with an opportunity to define an expression without requiring the user to navigate the Internet;

a communications path over which the expression is provided by the interactive program guide client to a program guide server, wherein the program guide server is programmed to find programs that satisfy the expression, and to schedule the programs that satisfy the expression for recording, to determine at least one

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program criteria associated with the programs that satisfy the expression, to determine a set of programs not yet scheduled for recording, and to apply the at least one program criteria to the set of programs not yet scheduled for recording to generate at least one personal viewing recommendation.

11. The system defined in claim 10 wherein:

the user television equipment comprises a storage device; and

the program guide server is further programmed to schedule the programs that satisfy the expression for recording by the storage device.

12. The system defined in claim 10 wherein the program guide server comprises a storage device on which the programs that satisfy the expression are stored.

13. A method for use in an interactive program guide system for providing a customized viewing experience to a user, comprising:

generating a viewing history database comprising program listings and associated program criteria;

determining at least one of the associated program criteria from the viewing history database that meets a user preference profile;

determining from a program listing database a set of programs not yet watched;

applying the at least one of the associated program criteria to the set of programs not yet watched to generate at least one personal viewing recommendation; and

providing the personal viewing recommendation to a user.

14. The method defined in claim 13 wherein generating a viewing history database comprises storing the program listings and the associated program criteria for at least one of:

programs that the user has watched;

programs for which the user has scheduled reminders;

programs for which the user has scheduled for recording;

programs for which the user has searched; and

programs for which the user has ordered.

15. The method defined in claim 13 wherein the associated program criteria comprises at least one of program categories, ratings, casting, and languages.

16. The method defined in claim 13 wherein the at least one of the associated program criteria is the same as at least one criteria defined in the user preference profile.

17. An interactive program guide system for providing a customized viewing experience to a user, comprising:

user equipment on which an interactive program guide client is implemented, wherein the interactive program guide client is operative to provide the user with an opportunity to create a user preference profile;

a communications path over which the user preference profile is provided by the interactive program guide client to a program guide server, wherein the program guide server comprises:

a first database comprising program listings and associated program criteria based on the user's viewing history at the interactive program guide client,

a second database comprising program listings available from the program guide server, and

processing circuitry operative (1) to determine at least one of the associated program criteria from the first database that meets the user preference profile, (2) to determine from the second database a set of programs not yet watched by the user at the interactive program guide client, (3) to apply the at least one of the associated program criteria to the set of programs not yet watched to generate at least one personal viewing



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recommendation, and (4) to provide the personal viewing recommendation to the user at the interactive program guide client over the communications path.

18. The system defined in claim 17 wherein the first database comprising program listings and associated program criteria is based on at least one of:

programs that the user has watched;  
 programs for which the user has scheduled reminders;  
 programs for which the user has scheduled for recording;  
 programs for which the user has searched; and  
 programs for which the user has ordered.

19. The system defined in claim 17 wherein the associated program criteria comprises at least one of program categories, ratings, casting, and languages.

20. The system defined in claim 17 wherein at least one of the associated program criteria is the same as at least one criteria defined in the user preference profile.

21. The method of claim 1 wherein scheduling reminders for programs that satisfy the expression further comprises, for each of the programs that satisfy the expression, storing a program listing and an associated program criteria in a viewing history database.

22. The method of claim 1 further comprising at least one of:

providing the user with an opportunity to tune to the personal viewing recommendation,

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scheduling with the program guide server a reminder for the personal viewing recommendation;

scheduling with the program guide server the personal viewing recommendation for recording; and

providing the user with an opportunity to order the personal viewing recommendation.

23. The method of claim 4 wherein scheduling programs that satisfy the expression for recording further comprises, for each of the programs that satisfy the expression, storing a program listing and an associated program criteria in a viewing history database.

24. The method of claim 4 further comprising at least one of:

providing the user with an opportunity to tune to the personal viewing recommendation,

scheduling with the program guide server a reminder for the personal viewing recommendation;

scheduling with the program guide server the personal viewing recommendation for recording; and

providing the user with an opportunity to order the personal viewing recommendation.

\* \* \* \* \*

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,065,709 B2  
APPLICATION NO. : 10/298274  
DATED : June 20, 2006  
INVENTOR(S) : Michael D. Ellis et al.

Page 1 of 2

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page 2, Item (56), in the References Cited,

Under U.S. Patent Documents, “5,422,389 A 6/1995 Trepka et al.” should be  
--5,422,389 A 8/1995 Blahut et al.--.

Title Page 2, Item (56), in the References Cited,

Under Foreign Patent Documents, “WO 97/17064” should be --WO 98/17064--.

Title Page 2, Item (56), in the References Cited,

Under Other Publications, before “Rewind” should be inserted --“--.

Under Other Publications, after “devices,” should be inserted --”--.

Column 1,

Line 7, “applications” should be --application--.

Line 27, after “program” should be inserted --guides,--.

Line 42, “,” after “systems” should be deleted.

Column 5,

Line 11, after “1999” should be inserted --(Attorney Docket No. UV-106)--.

Column 10,

Line 62, after “1999” should be inserted --(Attorney Docket No. UV-114)--.

Column 17,

Line 9, after “1999” should be inserted --(Attorney Docket No. UV-56)--.

Column 18,

Line 4, after “1999” should be inserted --(Attorney Docket No. UV-84)--.

Line 32, after “1999” should be inserted --(Attorney Docket No. UV-84)--.

Column 19,

Line 17, after “1999” should be inserted --(Attorney Docket No. UV-114)--.

Line 39, after “1998” should be inserted --(Attorney Docket No. UV-58)--.

Line 52, after “1998” should be inserted --(Attorney Docket No. UV-57)--.

Column 20,

Line 9, after “1998” should be inserted --(Attorney Docket No. UV-42)--.

Line 60, after “1999” should be inserted --(Attorney Docket No. UV-114)--.

Column 22,

Line 21, “2110. Program” should be --2110, program--.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,065,709 B2  
APPLICATION NO. : 10/298274  
DATED : June 20, 2006  
INVENTOR(S) : Michael D. Ellis et al.

Page 2 of 2

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 25,

Line 17, after “satisfy the” should be inserted --expression--.

Signed and Sealed this

Nineteenth Day of August, 2008

A handwritten signature in black ink, reading "Jon W. Dudas". The signature is stylized, with a large, looped initial "J" and a cursive "Dudas".

JON W. DUDAS  
*Director of the United States Patent and Trademark Office*

**CERTIFICATE OF SERVICE**

I hereby certify that on December 14, 2015, the foregoing BRIEF OF APPELLANTS ROVI CORPORATION, ROVI TECHNOLOGIES CORPORATION, ROVI GUIDES, INC., UNITED VIDEO PROPERTIES, INC., APTIV DIGITAL, INC., and STARSIGHT TELECAST, INC. was served by operation of the Court's CM/ECF system per FED. R. APP. P. 25.

Date: December 14, 2015

/s/ Joel L. Thollander

## **CERTIFICATE OF COMPLIANCE**

I hereby certify that the foregoing BRIEF OF APPELLANTS ROVI CORPORATION, ROVI TECHNOLOGIES CORPORATION, ROVI GUIDES, INC., APTIV DIGITAL, INC., and STARSIGHT TELECAST, INC.:

1. complies with the type-volume limitation of FED. R. APP. P. 32(a)(7)(B). This brief contains 12,897 words, excluding the parts of the brief exempted by FED. R. APP. P. 32(a)(7)(B)(iii) and FED. CIR. R. 32(b). Microsoft Word 2010 was used to calculate the word count.

2. complies with the typeface requirements of FED. R. APP. P. 32(a)(5) and the type style requirements of FED. R. APP. P. 32(a)(6). This brief has been prepared in a proportionally-spaced typeface using Microsoft Word 2010 in 14-point Times New Roman type style.

Date: December 14, 2015

/s/ Joel L. Thollander